

BIOETHICS

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MY BODY, THEIR BABY: A Progressive Christian Vision for Surrogacy by Grace Y. Kao. Stanford University Press, 2023. 274 pages. Paperback; \$30.00. ISBN: 9781503635975.

Surrogacy has long been understudied, underdiscussed, and even dismissed in Christian circles. Kao courageously begins the conversation by marrying a sophisticated argument, stemming from her expertise in ethics, gender, and sexuality, with her personal experience as a surrogate mother.

Kao considers surrogacy a morally good, supererogatory act. Like adoption, it is a form of reproductive hospitality. It engages certain risks for the greater benefit of the relationships between parents, children, and their community. However, Kao suggests that surrogacy is only morally good when it adheres to several conditions. For instance, the intended parents (IPs) should be in a stable marital or otherwise committed relationship, having already struggled with infertility. The surrogate should have experience with healthy pregnancy and be genetically unrelated to the baby. All three should reside in the same jurisdiction and have a strong relationship. The arrangement must be gestational (that is, the surrogate is not a genetic parent). In addition, it must be altruistic, with all costs covered by insurance and the IPs.

Kao supports her argument with scripture, tradition, reason, and experience. Biblical themes of covenant, vocation, and fidelity ground the relationships between the IPs, surrogate, and prospective child. Kao refers to progressive church traditions that address sexuality, marriage, and family alongside science and technology. Drawing on what she calls “secular sources of knowledge” (p. 5), she consults international human rights, professional medical ethics, and reproductive justice (more below). Her own experience as a surrogate literally fleshes out her primary claim: that the God who long ago ended Hannah’s suffering (1 Samuel 1) can today use assisted reproductive technology to do the same.

All of the above are important for understanding Kao’s constructive argument: a framework of seven ethical principles that should guide surrogacy relationships. The first two principles concentrate on the pre-surrogacy relationship. The IPs and the surrogate methodically reflect on the known implications of surrogacy. Both individually and collectively, they discern their respective reproductive vocations. Such reflection equips these parties to create a moral covenant of fidelity that precedes any legal contract. This covenant outlines a collective understanding of the nature of the relationships between the IPs, the surrogate, and the child during pregnancy and after birth. It expresses shared values and

how decisions will be made about expected, unexpected, and worst-case scenarios.

The next set of principles speaks to the time of active surrogacy. Mutual empathy, care, and stewardship set the tone for discussion and decision making if conflicts arise between competing medical interests or legal rights. Mutual disclosure is promoted over secrecy.

The final principles are public and concentrate on justice from a feminist perspective. Kao entreats us to “trust women” as capable of making reproductive decisions informed by experience (pp. 142–45). This does not mean, she cautions, that each woman will always make right decisions or that “anything goes.” Women are entitled to moral agency, and that agency depends, of course, on access to reproductive justice, the subject of Kao’s final principle. Drawing attention to the fact that women (and children) are chronically placed in precarious situations, reproductive justice calls for the amendment of reproduction-related laws and policies that adversely affect socially vulnerable people, particularly Black and Hispanic women and same-sex couples. Kao concludes her work by identifying creative ways to tackle surrogacy arrangements that, for one reason or another, stand outside this framework, including transnational and exploitative surrogacy.

Throughout this book, Kao uses her experience to address common concerns. One of interest to me is the expectation that the surrogate will develop a maternal closeness with the baby, despite sharing no genetic relationship. After all, even a prophet presumes this natural bond: “Can a woman forget her nursing child, or show no compassion for the child of her womb?” (Isa. 49:15).

Kao recalls that the bond she has with her own children began not during pregnancy but in the weeks following birth. She anticipated having the same experience in a surrogate pregnancy. She did, and she gave the baby freely to the IPs. Kao augments this personal experience—the basis for her “trust women” principle—with studies that show a majority of surrogates develop affectionate feelings like those of a nanny, but not a maternal bond (pp. 44–47). It would be helpful if she attended to research showing a correlation between the migration of fetal stem cells to the pregnant woman’s body, particularly, in relation to her brain and to her sense of attachment or bonding.¹

Some of Kao’s principles are informed by experiences that were not ideal. She did not anticipate all the complications that would arise. For instance, Kao struggled with the IPs’ refusal of preimplantation genetic testing, and their delay in determining whether Kao would breastfeed or express colostrum and milk for bottle feeding. Such experiences give her clearance to make strong

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recommendations on these subjects. They also humanize the text.

Kao's description of ethical surrogacy is detailed and reinforced by numerous studies and resources. Even so, there remain some ethical concerns she might speak to more thoroughly. Many pertain to the presumptions on which her argument rests. She views the following as morally permissible: (a) conception that is not the result of sexual intercourse; (b) IVF, including the discarding of unused embryos (Kao relies on her denomination's stance rather than offering her own sustained ethical defense; see pp. 93–94); (c) risks associated with IVF pregnancy, including preterm birth, placenta previa, and others; (d) embryonic risks associated with pre-implantation and prenatal genetic testing; (e) abortion when it is "in [the pregnant person's] or their fetus's best interests" (p. 75); and (f) the conception and parenting of children by same-sex couples. As these matters polarize the church, it would be helpful to have more fulsome explanations of Kao's foundational beliefs and rationale for calling them morally permissible.

Kao acknowledges the concern about the dynamic between environmental sustainability and the human population. Unfortunately, she discusses only the narrow view of antinatalism, claiming that no one should be forced to have fewer or no children (pp. 88–89). More could be said about how a growing population can maintain sustainable lifestyles.

Kao's argument for reproductive justice would be strengthened if greater attention were paid to broader social and economic injustices. Is surrogacy a responsible use of money in a world with parentless children? Kao defends the financial burdens and emotional toll of surrogacy as being on par with those of adoption (p. 80). Insisting that infertile people are not morally obligated to adopt, she maintains that surrogacy serves the public good by fulfilling the human vocation and right to have children (p. 149). This is tenable. However, reproductive justice, as Kao describes it, offers no alternative for parentless children. The named right of adults to have children competes with the unnamed right of children to have parents—a competition that ended unhappily for Sarai, Abram, Hagar, and Ishmael (Genesis 16, 17, and 21).

I continue to wonder about Kao's attention to the rights of adults when I read the title, *My Body, Their Baby*. Does the comma mark a clear separation of the surrogate and the baby? Kao supports this interpretation by reminding the reader that some pregnant women do not experience a maternal bond. And even when a bond exists, the fetus receives no genetic material from the surrogate, making them two separate entities (pp. 63–64). However, Kao fails to cite available research on DNA exchange or

epigenetic effects—research that blurs where "my body" ends and "their baby" begins.²

The title also fails to show the tension in the book between Kao's feminist approach that stresses personal agency ("trust women") and the social support she needed to live out her decision to be a surrogate. Strong relationships with the IPs and the child were necessary. Her household had to adapt, as well. Kao's spouse underwent medical and psychological testing, along with mandated periods of sexual abstinence. He took on additional household and parenting responsibilities, and regularly administered Kao's estrogen injections because of her fear of needles. Kao's children, too, were told about what their mother was undergoing. They were able to accommodate her need for ample rest while knowing they were not going to have another sibling. As the book ended, Kao and her family regularly visited with the parents and child—a "cousin" to her children. Kao's body was essential for surrogacy, but surrogacy was a shared experience.

As a Christian ethicist and mother of two, I found Kao's work compelling. Scripture does not provide clear moral instruction on the complex matter of surrogacy. It does witness to the importance of community as a place of nourishment and care. Kao admits so herself: "Surrogacy can serve as a metaphor for a deep truth of our Christian tradition—the caring and rearing of children was always intended to be a communal affair, not simply the task of the parents alone" (p. 100). This is a theological and ethical idea worth pondering.

Notes

¹For example, Mario Valerio Tartagni and Alessandra Graziottin, "The Love-Shaper: Role of the Foetus in Modulating Mother-Child Attachment through Stem Cell Migration to the Maternal Brain," *European Journal of Contraception & Reproductive Health Care* 28, no. 4 (2023): 216–22, <https://doi.org/10.1080/13625187.2023.2216326>.

²See Samira Negahdari, Maede Nilechi, Mehdi Forouzesh et al., "Evaluation of Epigenetic Factors in Surrogacy: A Mini-Review," *Journal of Obstetrics, Gynecology and Cancer Research* 8, no. 2 (2023): 95–104, <https://doi.org/10.30699/jogcr.8.2.95>.

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CHRISTIAN CULTURE

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QANON, CHAOS, AND THE CROSS: Christianity and Conspiracy Theories by Michael W. Austin and Gregory L. Bock, eds. Wm. B. Eerdmans, 2023. 286 pages. Paperback; \$24.99. ISBN: 9780802882653.

This book is a collection of twenty-four short essays written mostly by Christian academics with a background in philosophy and/or theology. It examines the

relationship between Christian believers—principally white American evangelicals—and conspiracy theories, particularly Covid-19 mandates, the QAnon movement, and the 2020 presidential election. Its stated goals are to shed light on the reasons why Christians get seduced by divisive conspiracy claims and to challenge followers of Jesus to think and communicate according to biblical teachings and the example of Christ.

In their introduction, the editors warn fellow believers that while conspiracy claims sometimes turn out to be true, a majority of them turn out to be false, unlikely, or unjustified. Belief in conspiracy claims is therefore problematic in a community that purports to be lovers of truth. Secondly, conspiracy beliefs often foster tribalistic attitudes and divisive exchanges, hindering the Christian's ability to properly love their neighbor and respect civil authorities, including those whom they suspect of conspiring against them. Thirdly, conspiracy thinking undermines the virtues of hope, forbearance, trust, and gratitude that Christians ought to reflect, provoking them to react impulsively out of fear and anger. American evangelicals are very politically active but also susceptible to having an "us versus them" mentality. Guarding hearts and minds against unproven conspiracy claims is urgent in this age of hyperpolarization (pp. ix–xi). The bulk of the essays in this book therefore promote the moral qualities that followers of Christ should manifest as ambassadors of the Kingdom of God.

Unfortunately, the essays in this book are presented in no particular order; this makes it hard for the reader to gain an overarching perspective. Nevertheless, the essays can be divided into three broad categories: (1) essays that discuss what conspiracy beliefs are and why some are particularly attractive to Christians; (2) essays that critique the evangelical proclivity to confuse civil religion with biblical doctrine, thereby blending their political convictions with their spiritual calling; and (3) essays that exhort Christians to adopt a Christ-like attitude when engaging in polarizing conspiracy talk. The distribution of essays among these categories is uneven. The third category is particularly overrepresented, and this leads to frequent repetition.

Furthermore, insufficient attention is given to unpacking the origins and contents of the conspiracy theories this book addresses. This makes it hard for uninformed readers to grasp the social and epistemic roots of evangelical conspiracism, such as the reasons evangelicals are, in general, more suspicious than the wider populace of public education, academic science, and government-funded social programs. The book also lacks historical, political, and sociological depth. Most of this book's contributing authors, who are almost exclusively drawn from philosophical and theological faculties, show little familiarity with the leading social science research,

namely the works of Barkun,¹ Uscinski and Parent,² Dyrendal, Robertson, and Aspren,³ Douglas et al.,⁴ and Knight and Butter.⁵

A few essays stand out as superior. Those by Scott Culpepper ("The Cost of Debunking Conspiracy Theories") and Chase Andre ("The Religious Rhetoric of QAnon") are the only contributions that adequately unpack a specific conspiracy theory—the 1980s Satanic Panic and QAnon, respectively. In each case, they demonstrate how Christians embraced attractive falsehoods that bolstered their moral outrage and sense of victimhood, carelessly empowered charlatans by failing to vet extravagant claims, and shut down thoughtful dissent. Essays by Rick Langer ("Testing Teachings and Torching Teachers") and Tim Muehlhoff ("Word Spoken at the Proper Time") rightly encourage Christians to be empathic and humble communicators, fair-minded toward ideological opponents, and aware of their own biases.

Several essays are of questionable merit and pertinence. The essays by Chad Bogosian ("Is It Always Wrong to Believe in A Conspiracy Theory?") and Christian B. Miller ("All Christians Are Conspiracy Theorists") fail to distinguish proven conspiracies (which tend to be simple criminal acts) from speculative conspiracy theories (which frequently resemble far-fetched movie scripts). They recycle the disputable argument of Charles Pigden (among others) that conspiracy theorizing is a legitimate and healthy form of public discourse, while ignoring a wealth of historical and sociological evidence to the contrary.⁶ Similarly, Bogosian and Miller work from vague and self-serving definitions of conspiracy, reducing the concept to "actions or plans undertaken by a small group [...] to achieve shared goals" (p. 14), and "a small group of people acting in secret" (p. 99)—and not, as is widely understood, a secret plot whose goal is to deceive, manipulate, or harm others illegally and/or maliciously. Bogosian's and Miller's overly broad characterization of conspiracies could risibly include any number of legal, benevolent, and innocuous acts, such as confidentiality agreements, security clearances, surprise birthday parties, and the inscrutable will of a triune God—the latter used by Miller to argue that conspiracism is not in itself problematic since it is practiced daily by all believing Christians. But this is obviously not the sort of "conspiracy" that leads prominent Christian leaders to proffer angry and unfounded accusations in the public square.

Even more problematic are essays by Shawn and Marlena Graves ("Conspiracy Theories and Meaning in Life") and Susan Peppers-Bates ("The Greatest Conspiracy Ever"), which are mired in (left-leaning) political rhetoric, non-sequiturs, and a shallow understanding of the history of conspiracy thinking. Graves and Graves, for instance, attribute the popularity of conspiracy theories

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in America—including the recent QAnon panic—to the industrial revolution of the 19th- and 20th-century globalization of markets, both of which, they argue, caused dislocation of communities, “ubiquitous isolation and alienation,” and an enduring crisis of meaninglessness (pp. 44–45).

In the grand context of an industrialized and predatory neoliberal society where communities are fractured and kinship ties are nearly non-existent ... where people feel invisible and unmoored, grand conspiracies can function as the gateway to satisfying the drive to find meaning. (p. 45)

Such conclusions smack of circular reasoning, in that any objective historian of conspiracism could easily summon many examples of conspiracy claims, witch hunts, and moral panics that long preceded industrialization and “predatory neoliberalism.” The essay then roams off into a discussion on meaningful existence using Klansmen and Nazis as counterexamples, leaving the reader to wonder what any of this has to do with biblical doctrine or the political fears of American evangelicals.

Peppers-Bates’s essay is the nadir of this collection. In her words,

the seemingly peculiar phenomenon of U.S. evangelical Christians accepting baseless conspiracy theories is grounded in a prior, deeper tendency of Judeo-Christianity in general to reduce God to a white male idol, and in particular to silence or ignore the voices of women, people of color, LGBTQI, and other marginalized groups. [...] Once a group is demeaned, it becomes much easier to believe that they engage in paedophilia, drink blood, cause COVID, or any number of wild claims. (p. 145)

The logical and factual problems with this essay are legion. Not only is its accusatory tone and excessive use of Foucauldian jargon likely to make the book’s target audience stop reading it altogether, it is filled with many misunderstandings of evangelical teachings and culture, often confusing them with those of mainstream Protestants, Catholics, and even white nationalists. It suffocates its reader in a word salad of cryptic terms like “othering,” “patriarchization,” “white-washing,” “white supremacy,” and “religious meaning-making.” It ends with a misreading of the Parable of the Good Samaritan—the only scriptural reference offered in this essay and one she surprisingly argues is rarely taught in evangelical churches.⁷ Poorly researched and argued, it comes across as more paranoid than the conspiracy theories Peppers-Bates set out to debunk, undermining many of the thoughtful reflections offered elsewhere in this book.

While *QAnon, Chaos, and the Cross* contains some excellent and thought-provoking contributions, it falls short of serving a general church-going audience due to its lack of organization, insufficient reliance on the leading

academic research, and the incongruity in quality and usefulness of its component parts.

Notes

¹Michael Barkun, *A Culture of Conspiracy: Apocalyptic Visions in Contemporary America*, 2nd ed. (University of California Press, 2013).

²Joseph E. Uscinski, ed., *Conspiracy Theories and the People Who Believe Them* (Oxford University Press, 2019); and Joseph E. Uscinski and Joseph Parent, *American Conspiracy Theories* (Oxford University Press, 2014).

³Asbjørn Dyrendal, David G. Robertson, and Egil Asprem, eds., *Handbook of Conspiracy Theory and Contemporary Religion* (Brill, 2018).

⁴Karen M. Douglas et al., “Understanding Conspiracy Theories,” *Advances in Political Psychology* 40, Sup. 1 (2019): 3–35; <https://doi.org/10.1111/pops.12568>.

⁵Peter Knight and Michael Butter, eds., *Routledge Handbook of Conspiracy Theories* (Routledge, 2020).

⁶See Peter Knight and Michael Butter, “The History of Conspiracy Theory Research,” in *Conspiracy Theories & the People Who Believe Them*, ed. Joseph E. Uscinski, 33–46, <https://doi.org/10.1093/oso/9780190844073.003.0002>.

⁷For example, the wounded Jew in the parable—a victim of a violent robbery—is falsely described as a “leprous Samaritan” to turn the parable into a lesson about racist hatred instead of religious legalism.

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COMING TO FAITH THROUGH DAWKINS: 12 Essays on the Pathway from New Atheism to Christianity by Denis Alexander and Alister McGrath, eds. Kregel Publications, 2023. 294 pages. Paperback; \$21.99. ISBN: 9780825448225.

The Four Horsemen of the New Atheists—Richard Dawkins, Christopher Hitchens, Sam Harris, and Daniel Dennett—have faded from the cultural spotlight they once attracted. Their books were not only best sellers but their take-no-prisoner approach toward religion in general, and Christianity in particular, dominated conversations and apologetic efforts in the West for the last two decades. However, times have changed.

The New Atheists are now the Old Atheists. The questions once raised still linger faintly, but cultural conversations have shifted dramatically. Instead of asking, “Does God exist?,” there is now an array of books and personalities asking and answering questions of sex, gender, and race, to name but a few. We have new questions and new influencers that now dominate the conversation in academy and household. That being the case, one cannot help but ask: Why write another book about Dawkins? Yet, as it turns out, the Old Atheists are not as irrelevant as one might think. In fact, much of this current cultural moment is a product of their making, one we would be wise to learn from and understand.

Coming to Faith Through Dawkins comprises twelve essays, written by men and women with varying backgrounds from accomplished academics to micro-dosing hippies and everything in between. This broad collection indicates that Dawkins and his atheist popularizers might still have a place in the cultural conversation that ironically is bringing people to faith. Although the title is provocative, not every essay is directly a *coming to faith story* because of Dawkins alone. Instead, the book is composed of real people inviting the reader into their journey to faith in God through the Four Horsemen—who, instead of ushering in an apocalypse of unbelief, brought about in these contributors a turning point to find peace and salvation in Jesus Christ. Although the twelve journeys to faith are distinct, there are key themes that emerge and tie the collection together quite powerfully in the current cultural moment.

First, the stories have not been evangelically sanitized. Unlike a cheesy Hallmark movie that ties up all the loose ends with characters that no one except Ned Flanders can relate to, the contributions are refreshingly honest—a feature lacking in the New Atheist literature. These essays are more like reading the Bible—the stories are of real people and, like real life, are messy. What they show is that a journey to faith is not always a straight line, nor altogether complete; there are loose ends, which is, ironically, juxtaposed to the New Atheist plotline that unbelief has it all figured out. These essays are an invitation into the mind and heart of honest people who came to Jesus and are still journeying with God. As expressed in these narratives, faith does *not* mean that you have all your questions answered, nor that you will not have new questions to ask along the way, nor that doubt is not a real part of life.

Second, these stories masterfully show faith as a journey, best traveled in honesty and humility—something the contributors did not find in the works of Dawkins or Hitchens, who are known for their rhetorical wit and provocative prose. Taking aim at the hubris of the religious, the New Atheist's pride and rebukes became their own worst enemies. Although some people were drawn to their strawman attacks and cheered their ad hominem triumphs, this same condescending tone led many of the contributors to this book to reconsider the validity and veracity of the New Atheists' arguments ... or lack thereof. This volume clearly shows that people are looking for honest discussions, presented with the graciousness of mind that comes from those who realize they could be wrong and are willing to face their own doubts.

Lastly, this book is a much-needed encouragement; God is at work in the most stubborn, hostile, and distant of people. From tears to laughter, these essays remind Christians of the importance of sharing our faith and lovingly engaging with people. It must be said that William

Lane Craig is a consistent voice in this collection, who encouraged people not only by his clarity of thought but also by his respectful engagement, something the world needs now, more than ever.

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ENVIRONMENTAL SCIENCE

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FOLLOWING JESUS IN A WARMING WORLD: A Christian Call to Climate Action by Kyle Meyaard-Schaap. InterVarsity Press, 2023. 208 pages. Paperback; \$18.99. ISBN: 9781514004456.

If you, or a Christian friend, are unsure of the appropriate faith response to climate change, this just might be the book to read. If you have been involved with Christian creation care for a while and want to see what the next generation of leaders has to offer, read the book.

The Reverend Kyle Meyaard-Schaap has plenty of experience guiding people through the process of integrating their faith with creation care—from his work with Young Evangelicals for Climate Action, to vice president of the Evangelical Environmental Network, to his current position as the executive director of the Association for a More Just Society in the US. He is ordained in the Christian Reformed Church in North America.

Meyaard-Schaap loves to tell stories throughout the book and does it well. That gives the book an informal but engaging feel. It is a straightforward read: you will not be reaching for a theological or scientific dictionary; you will not have to interpret any charts or graphs. The book covers a wide swath of material in a few pages so, by its design, it is an introductory book. It would serve that purpose better if it pointed the reader to additional readings at the end of each chapter. The book makes extensive use of the Bible; these references should appeal to an evangelical audience, although a scriptural index would have been helpful.

The introduction covers the consensus around climate change, a history of the recent meetings of the Conference of the Parties, the temperature goals that were set at the twenty-first meeting in Paris, and how our actions are inadequate to meet those goals. The key question this book attempts to answer is: How are we supposed to respond to this reality as followers of Jesus?

In the first chapter, "Coal and the Greatest Commandment," Meyaard-Schaap uses a story of an activist against mountaintop removal coal mining to review the associated environmental issues while introducing us to the coal miners, as well as their families and friends. Their culture gives them meaning and pride in what they

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do, yet the health issues they experience cannot be minimized. The author examines the complexities of God's greatest commandments as they relate to the people and the mountain.

The second chapter, "How Did We Get Here?," explores the power of story in shaping all aspects of our lives, including faith and politics. The author tells how evangelicalism became associated with Republican politics as well as the politics of oil and big tobacco, and the idea that Earth is temporary. "When this political story is combined with a theological story ... climate action is more often than not seen as a partisan threat, a theological heresy, and a dangerous conspiracy—a wild deviation from the stories that have formed them" (p. 35).

Chapter 3, "Recovering the Big Story," examines the relationship between the earth, God, and humans as told in Genesis, Job, John, Colossians, and Revelation. Briefly, God creates a universe that is good and puts humans in the garden to serve and protect the garden. However, as we all know, humans fail miserably in this task and require frequent reminders about God's covenant with all of creation and their role in caring for it. This chapter should whet the appetite of the evangelical reader who regards the Bible as authoritative.

The next chapter, "Climate Action Is Good News," explores some big questions: What is the role of evangelism in a warming world? For whom is the Gospel good news? The author concludes that if we follow the example of Jesus, the Gospel should be good news even for those "bent low by the impacts of a changing climate" (p. 70). Advocating for environmental justice becomes a foretaste of the kingdom to come and it provides an opportunity to share his name and message.

Chapter 5, "Being Pro-Life in the Age of Climate Chaos," deals with the multitude of ways that climate change is affecting and killing people around the world: for example, from the farmer in Kenya, the nine million deaths worldwide due to air pollution, the possibility of pandemics, and more. The poor and those unable to respond to the challenges disproportionately bear the burden of climate change effects. The conclusion: we need to "drastically expand our understanding of what it means to be pro-life" (p. 92).

In chapter 6, "A Story Can Change the World," Meyaard-Schaap advances the thesis that sharing our climate change story is important. But why is it important that we as individuals share our personal stories? We listen to those we trust. Who shares the story is more important than the details of the story. But to be effective we must also listen to the stories of those we are trying to influence. This way we can relate our concerns to their concerns. The chapter shares Katharine Hayhoe's three steps for engaging in effective conversations about

climate change: find something you have in common, connect climate change to it, and find a way forward you can agree on.¹ To this, the author suggests we need to add an invitation for action.

The next chapter, "God's Pleasure, Our Joy," focuses on how to sustain advocacy. The author suggests finding a community that allows us to find joy and gratitude, as well as practicing simplicity as a spiritual discipline of climate action. Appendix A gives additional examples of lifestyle changes, including activism. However, he neglects the concept of eco-spirituality; from dialogue with Indigenous peoples to modifications of Ignatian spiritual exercises, this is an active area of exploration within the Christian church.

Chapter 8, "Loving Our Neighbors in Public," addresses the systemic nature of climate change. After a historical review, the author argues that the systems in place are not neutral; they have brought us to the current situation, benefiting some, and hurting others. Because of systemic injustices, Christians must "do justly now." This chapter gives specific and concrete examples of how to engage politically: writing an op-ed piece (with more detail in appendix B), using social media, and yes, of course, voting.

The final chapter, "Christian Citizenship in a Warming World," explores engagement consistent with scripture that is other oriented and Christlike. Meyaard-Schaap suggests that being in a supportive community and anchoring ourselves in spiritual practices are important for keeping God in control, and not our ego, so that others may see the fruits of the Spirit.

Overall, this is a good initial book for understanding a Christian approach to climate change. I wouldn't hesitate to give it to someone who is getting started on their creation care journey. For those who have been involved in the creation care movement for a while, the suggestions for engagement in chapter 8 are well worth reviewing before taking pen to paper or dialing up your congressional representative. The stories are well told, insightful, and memorable. There are many places in this book where references could be made to those who have gone before, who have created the insights that are now standard. But this is not a full academic treatise. It is the responsibility of each generation to take what has gone before and put it into the language and idiom of the current generation. That is how the work continues. Judged in that way, this is a valuable contribution to what it means to be a Christian in a world that is endangered by human-created climate change.

Note

¹Katharine Hayhoe, *Saving Us: A Climate Scientist's Case for Hope and Healing in a Divided World* (One Signal, 2021), 225.

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EVOLUTIONARY THEORY

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THE BLIND SCIENTIST: Unmasking the Misguided Methodology of Neo-Darwinism by Alexander J. Bonitto and John S. Knox. Wipf & Stock, 2024. 110 pages. Paperback; \$21.00. ISBN: 9781666783179.

This book is based on a thesis submitted for an MA in Christian Apologetics at Liberty University. At the time of writing, the primary author (Bonitto) had a BS in health sciences, along with an MBA in sports management; the second author (Knox, Bonitto's thesis supervisor), a PhD in theology and religion, an MA in sociology, and a MATS in Christian history and thought. Although neither has a graduate degree in biology, the goal of their book was to

examine the concepts, contexts and constructions surrounding postmodern scientism—not just to disprove the presuppositions and conclusions of neo-Darwinism—but to demonstrate that science has become far too political, unempirically presumptuous, and precarious in its presentations of “the facts.” Rather, this book seeks to carefully weigh the principles and practices of neo-Darwinian theory to determine which tenants [*sic*] could and should be considered truly *scientific* while practicing Jesus's teachings of *grace and truth*. (pp. xv-xvi; emphasis in the original)

The authors first identify five a priori assumptions which undergird neo-Darwinism (pp. 10, 44):

1. Life has evolved via a long series of small incremental steps, from simple toward more complex (gradualism).
2. All life originated from a single organism, and lineage can be traced via an interconnected tree-of-life (common ancestry).
3. “Micro-evolutionary” changes account for “macro-evolutionary” change (within-species changes account for speciation per se).
4. With enough time, random genetic mutations can accumulate and account for the complexity of organisms today (“time and chance”).
5. “All scientific explanations must explain any and all phenomena via material causes” (methodological naturalism).

Bonitto and Knox then set out to invalidate all five of these a priori assumptions but use debunked, misunderstood, and/or misrepresented arguments. Early in their treatise they present Behe's irreducible complexity and misguided calculations of the incredible improbabilities of lining up single random point mutations as the only pathway towards increased information content. Undiscussed are more recent and sophisticated advances in genetics which explain the paradoxes that they dwell

on (particularly single point mutations being insufficient to account for new complexity, and discordant trees-of-life), such as gene duplication, exaptation, horizontal gene transfer, recombination, mobile genetic elements, and large-scale genomic rearrangements, although they do make one passing reference to “jumping genes” which they identify as “junk DNA” (p. 17).

The Cambrian explosion and broken lineages, including sudden appearances of new species and “missing links,” (pp. 47–53, 77) are seen to invalidate gradualism and common ancestry, even though the authors say nothing at all about how fossilization works or its limitations. That is, fossilization is an exceptionally rare and sporadic event (only a miniscule fraction of the organisms that have ever lived become fossilized) and so large morphological changes can occur without leaving any fossil evidence (the gaps and leaps in the fossil record). Bonitto and Knox characterize punctuated equilibrium as merely an ad hoc or circular argument to obfuscate missing data and to “cover up the contracting evidence” (p. 77), even stating that “at best, it is a well-educated guess” (p. 47): Such dismissive comments about an idea that is as well established and widely accepted by experts as punctuated equilibrium are unfortunate. In one specific case (p. 49), they focus on Stephen Meyer's description of a genetic study which examined 2,000 genes in six animals from diverse phyla which *they* felt could not possibly be explained by the tree-of-life hypothesis. However, the original authors of that scientific paper¹ went on to show that the puzzling data were a result of horizontal gene transfer between species (a now well-documented phenomenon which entangles or enjoins the branches of diverse trees-of-life).

Bonitto and Knox go on to reason that “the evidence of the fossil record could not, on its own, refute the synchronic Darwinian model” (p. 8)—evidently suggesting that fossilization and genetic changes were going on at the same time and acting on the same substrate (the organisms) so they *should* produce the exact same Tree-of-life—and then claim that the many discrepancies between the two clearly refute neo-Darwinism. They don't seem to understand that those two forms of Trees are measuring completely different parameters: (1) that two different species (placental versus marsupial mice, for example) can have seemingly identical morphology (reflected in the fossils) but arise from completely different lineages (reflected in the genetic sequences), (2) that a single species can have profoundly different morphologies (breeds of dogs, for example), and (3) that trees-of-life generated from morphological changes are severely lacking in precision and accuracy compared to trees-of-life generated from genetic changes (e.g., with the latter affording one a chance to use genetic testing in order to claim an inheritance dating back a few generations, whereas the former would not).

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I find other lines of reasoning that they level against neo-Darwinism to be quite misleading. On the one hand, they employ statements made by dozens of scholars – including Francis Collins, who is listed amongst “Christian scholars who disagree with Neo-Darwinism” (pp. 17–18, 90–91) – which essentially amount to “We don’t yet completely understand this-or-that particular element of biology” as evidence against neo-Darwinism. And on the other hand, they frequently include argumentation pertaining to the origin of life, even though neo-Darwinism does not attempt to explain the origin of life.

Credit goes to Bonitto and Knox when it comes to the fifth a priori assumption: methodological naturalism. As they parse that fifth phrase (which I have quoted verbatim above), they are correct. Unfortunately, they have set up a tautology (akin to stating an “assumption” that hydraulic mechanisms can involve fluids only). A *scientific* explanation is, by definition, restricted to material causes. Scientists can directly examine only the material realm; they struggle to operationalize and test non-material matters (not just theological ones, but even matters such as consciousness, mind, love, or whatever preceded the Big Bang). But that does not prevent neo-Darwinists from *believing* privately that non-material causes *might* also be at play without explicitly weaving the latter into their explanations (thus avoiding God-of-the-gaps arguments). And they will call those *belief statements*, not scientific explanations. This does not invalidate neo-Darwinism.

Bonitto and Knox liken neo-Darwinism to the clumsy Ptolemaic cosmological model – which history ultimately revealed to be an unwieldy, indefensible, contrived, ideologically inspired hand-waving invention – and liken more recent attempts at refining the neo-Darwinian synthesis as equivalent to the introduction of epicycles into the Ptolemaic model of the cosmos in a failed attempt to account for contradictory observations. They ask why neo-Darwinists hang on so tightly to a theory that is so evidently flawed and unsupported: they suggest that scientists don’t want God to exist, do not want to “let a Divine foot in the door” (pp. 13–14, 19, 31, 78, 92), want to enjoy an immoral lifestyle and want financial stability. They draw lines connecting neo-Darwinism to atheism, Karl Marx’s Communism, Hitler’s Nazism, nihilism, the horrendous Columbine shootings, and eugenics and social cleansing programs, argumentation that I find to be unhelpful. Although they acknowledge that Darwinism may not be a *sufficient* condition for those aberrations, they then take two steps backward by finishing with “it is undoubtedly a necessary condition. Evidently, bad science can cause bad consequences” (p. 96).

I regret that I cannot recommend this book. I disagree with the authors’ conclusions that neo-Darwinism is a product of erroneous presuppositions which may foster

“bad thinking,” “bad science,” and “bad society” (p. xvii). Bonitto notes in the preface that he is “not a professional scientist” and “did not set out to add any new scientific research on evolution or scientific methodology” (p. xv); adding another co-author with doctoral-level training in biology might have been useful and is recommended for their future work on this topic. It is important to have more collaboration between theologians and scientists, each with their unique but complementary perspective on truth (as per Augustine’s “Book of God” and “Book of Nature”). Overall, this book is insufficient to address the monumental task of discrediting neo-Darwinism, which is based upon extensive accumulation of data and is backed by the vast majority of the scientific community, including experts in all the relevant areas. I found irony in the penultimate paragraph of the preface to this work in which Bonitto states,

My goal for this modest book is to illuminate the importance of preconceived ideas when drawing intellectual inferences. One’s presuppositions can heavily cloud how a thing is interpreted but true science has always been about filtering out personal biases ... Bad thinking leads to bad science, which inevitably ends in a bad society. (p. xvii)

I would reflect those statements back at the authors.

Note

¹Michael Syvanen and Jonathan Ducore, “Whole Genome Comparisons Reveal a Possible Chimeric Origin for a Major Metazoan Assemblage,” *Journal of Biological Systems* 18. no. 2 (2010): 261–75; doi.org/10.1142/S0218339010003408.

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WHAT HATH DARWIN TO DO WITH SCRIPTURE? Comparing the Conceptual Worlds of the Bible and Evolution by Dru Johnson. IVP Academic, 2023. vii + 224 pages. Paperback; \$24.99. ISBN: 9781514003619.

Despite the book’s title – *What Hath Darwin to Do with Scripture?* – this is not a typical origins book. For example, its author, Dru Johnson, does not lay out a specific biblical view of the creation narrative and then seek to show how mainstream scientific findings line up (or not) with this narrative. Rather, he starts off with the premise that both the scriptural and evolution narratives are founded on a single principle: becoming fit to live in a world where resources are in short supply. Survival, in each story, depends upon this “fittedness.” Furthermore, since God is the Author of both narratives, then “fittedness” for life in each story should be consistent with God’s character. But is it? That’s the question that runs all the way through this book. On the one side, the book follows the biblical picture of what God states is necessary for Israel to thrive in the midst of scarcity. On the other side, it summarizes the author’s understanding of

the current state of evolutionary biology. Do the two stories reveal a commonality as we would expect if a single individual (God) is responsible for both? An all-important question, indeed.

Johnson is a biblical scholar, and his detailed summary of the central role of surviving-through-scarcity in Israel's history is a fascinating read. It starts with Genesis, proceeds through the exodus and on to the prophets, showing at each step what God expects if people are to thrive in a world where scarcity makes life very difficult. Nowhere is that laid out more clearly than in Deuteronomy 28 where the ramifications of obeying (and not obeying) God's commands are laid out in stark detail. Thriving in a world of scarcity is possible, but it requires living in worshipful harmony and obedience with the rules-for-living set out by God. That's the ancient story laid out by the biblical writers.

In considering life in a world where scarcity reigns, Johnson states that there are "remarkable similarities between Darwin's version of natural selection and the biblical discourse on the same topics" (p. 7). It is not that he necessarily thinks the two stories lead to the same conclusion about God. Rather, this is what he wants to test. By placing the way in which they are told against each other, the telling of these two stories "can help us see unseen features that shape the world ... and they do so at least in part to convince us how to *live*. These are ethically freighted tales" (p. 12). But is Johnson right about this? Are the goals of the biblical authors and the evolutionary scientists who explain evolution doing the same thing? Do the scientists seek to "convince us how to live" as they shape their story of the evolution of life on Earth? Some do, of course, but when they do so, have they not stepped out of the world of science and moved into the realm of philosophy or religion? The single most important purpose of the biblical story is to show us how we ought to live. What about determining how we ought to live from hearing the science story? Well, I think that is more complicated.

Nonetheless, Johnson's main point is well taken. If the Author of both books is one and the same, we should not expect major differences to arise as long as we are laying out each story correctly. I am a biologist, so I will restrict my comments largely to Johnson's description of evolutionary biology. But there is an important point related to the Bible I need to make from the start. He writes that the biblical view assumes "a pivotal reorientation of the cosmos" after the Fall (p. 4). Later Johnson expands on what he considers to be the ramifications of this view: Evolutionary biology assumes that "the metaphysical nature of the universe remains unchanged. The laws of thermodynamics, gravity, electromagnetism, and the like persist. This means that biology plays in the same realm of physics as it always has" (p. 35). In other

words, before the biblical Fall (which was almost the entire span of billions of years during which life forms emerged according to evolutionary theory), the cosmos was functioning with a different set of natural laws. I am not a biblical scholar, but I know there is not unanimity on this point among Old Testament scholars. (See Iain Provan's 2014 book, *Seriously Dangerous Religion*, for example). Obviously, Johnson's view of the biblical story makes it difficult to take evolutionary theory seriously because all aspects of evolutionary theory have been formulated under the assumption that the cosmos has always operated under the same natural laws as it does today. Johnson thinks that the biblical authors assumed this was not the case.

Still, despite this initial skepticism brought on by his particular view of the biblical story, the book proceeds to describe Johnson's view of evolutionary theory. He correctly writes that Darwin stressed that competition for fitness was the fundamental axiom of evolutionary theory. He is also correct to assert that, under certain circumstances, cooperation can be important too. But Johnson writes that this was not introduced into evolutionary theory until the 1930s, and that it conflicted with Darwin's original theory. Actually, it was Darwin himself who predicted that there would be circumstances when cooperation would come into play, even as Darwin correctly pointed out that this would not only *not* be in conflict with natural selection, it would actually be expected.¹ Not only that, but it was Darwin who accurately predicted the concept of kin selection as the basis for altruism in certain circumstances. These concepts were not new to evolutionary theory, somehow proving Darwin wrong as Johnson implies. They were built into the theory of natural selection by Darwin himself almost from its earliest days.² But natural selection was and still is at the heart of the theory—even in cases in which the most successful evolutionary strategy is cooperation.

Johnson refers to current evolutionary science as a "moving target" (p. 15), and he implies throughout the book that *core* foundations of evolution are still up for debate and reinterpretation. As a biologist, I don't see it that way, and to the extent that Johnson leaves this impression, I am left with some discomfort with his rendition of the story. Dobzhansky's famous sixty-year-old statement, "Nothing in biology makes sense except in the light of evolution," is just as true today as it was when he first made it. On the other hand, if by "moving target," he means that scientists are still working out the details, that would be an accurate summary of the current state of affairs, and that, after all, is the way science functions. I just wish he had made that clearer. This is especially important given that at several points (see the above discussion of the cosmic Fall), he expresses skepticism about evolutionary theory. His skepticism is also illustrated by this statement: "Most of us are struggling with

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what to make of the ... fossil record, and that is a right and necessary struggle. The so-called natural history of our planet has a lot of explaining yet to do" (p. 191).

Johnson does not explain who, or why, "most of us are struggling" with the fossil record, but by framing it in this manner and not explaining why he thinks this way, he is in danger of being perceived as not fully examining the evolutionary story he seeks to tell. Regardless of what some biblical scholars may think, evolutionary scientists think the fossil record provides a remarkably revealing picture of how life has unfolded on Earth over hundreds of millions of years.

Johnson spends quite a bit of time examining sexual reproduction in both the evolutionary and biblical accounts. He thinks that mammalian evolution (including our own hominin lineage) has been characterized by a long history of males forcing copulation on females. He cites a paper from 2006 in which forced copulation and/or sexual violence is the norm in guppies, ducks, and several species of flies, but that paper provides no evidence for its pervasiveness within the wider evolution story. More recently, a meta-review of mammalian sexual aggressiveness and coercion throughout the mammalian world identifies only four of thirty-two mammalian orders which have documented examples of such activity, and the author was able to identify only one species which represented a case in which sexual violence provided an adaptive advantage.³ Johnson's concern, of course, is that if such activity is the norm in the evolutionary story, it creates a conflict between evolutionary and biblical stories. However, we have no reason to think it is the norm.

Continuing his discussion of sexual reproduction, Johnson goes on to draw a conclusion about a particular evolutionarily strategy, one that is of special biblical interest—monogamy. He states, "Monogamy is not evolutionarily advantageous. It does not make sense" (p. 136). Actually, there are various types of evolutionary reasoning that explain how monogamy *does* make evolutionary sense under certain circumstances. Frequently the advantages relate to the father's active involvement in parenting and retaining the sort of relationship that will ensure the offspring he is caring for are really his own. Indeed, one investigation suggests that the movement toward monogamy in human evolution (compared to our promiscuous ancestors of several million years ago) may have played a significant role in enabling the massive increase in brain size that characterizes our lineage.⁴

As the book draws to a close, Johnson writes: "Is there a way to reconcile entirely the Hebrew intellectual world to the present evolutionist accounts, theistic or otherwise? I am now less sure ..." (p. 175). Although this question remains of the utmost importance, trying to get

a clear answer begins with being sure one has an accurate view of both stories. Does this book help to provide such a view? Of that, I am not so sure.

Notes

¹Darwin, *The Descent of Man*, Kindle Edition (2014), p. 23.

²See E. O. Wilson, *The Social Conquest of Earth* (Liveright, 2013) for a discussion of this point.

³Marcelo H. Cassini, "Sexual Aggression in Mammals," *Mammal Review* 51, no. 2 (2021): 247–55, <https://doi.org/10.1111/mam.12228>.

⁴For details, see Carl Zimmer, "Monogamy and Human Evolution," *New York Times*, August 2, 2013, <https://www.nytimes.com/2013/08/02/science/monogamys-boost-to-human-evolution.html>.

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WILD EXPERIMENT: Feeling Science and Secularism After Darwin by Donovan O. Schaefer. Duke University Press, 2022. 328 pages. Paperback; \$28.95. ISBN: 9781478018254.

Donovan Schaefer is currently in the Religious Studies Department at the University of Pennsylvania. Although he is a member of a program focused on religion, he describes himself as an atheist. His interest in understanding religion more deeply, particularly as it relates to *affect theory* (an approach to knowledge and culture that focuses on emotions), is exemplified by his scholarly work and his close relationship with Alister McGrath—theologian, historian, mentor, and close friend.¹ While religious research might seem inappropriate for an atheist, one could argue that Schaefer presents an outsider's perspective in religious studies. In *Wild Experiment*, he examines the intersection of affect theory with science, religion, and secularism, and the development of conspiracy theories and racialized reasoning

Schaefer divides his book into Part I: Cogency Theory and Part II: Feeling Science and Secularism. Part I provides readers with a thorough understanding of the epistemological, axiological, and ontological stances present in knowledge making. Schaefer develops his idea to explore the interconnectedness of feelings, emotions, values, beliefs, and life experiences which drive knowledge making. Cogency theory is "a collection of perspectives on how thinking is made by feeling" (p. 10). Schaefer argues that "[n]ew knowledge feels true to us because it lands on our existing landscape of understanding in a way that fits. It clicks with the terrain already in place" (p. 6). Part II examines the historical background of the development of evolutionary theories, and the responses to these theories by religious institutions, particularly the Roman Catholic Church. This section connects the dots between affect, as an intrinsic part of knowledge-making, and evolutionary theories, racism, and the development of conspiracy theories.

Using the “click” metaphor, Schaefer explains how individuals align with information that “feels so good” (a common phrase used in the book). This *good feeling* grounds his cogency theory—the idea that we feel our way to knowing. He believes we cannot separate feelings from understanding because the two concepts are inextricably joined. To develop his theory, Schaefer appeals to Michael Polanyi’s *post-critical* understanding of the subjectivity involved in knowledge making, Thomas Kuhn’s concept of *incommensurability* arising from the biases brought into science by autonomous individuals, Nietzsche’s ontological perspective that we make our own realities based on personal experiences, William James’s fallibilist belief that all views are subject to fallibility, and evidence from science and technology studies (STS) that knowledge emerges from lived experiences. He further explains that the feelings involved in knowledge making can readily influence our willingness to accept scientific or biblical evidence—such as those associated with evolution, creation, climate change, and racism.

As Schaefer transitions to Feeling Science and Secularism, readers become aware of the pros and cons of the *click* that drives knowledge making. On the one hand, deriving joy from a topic or a task drives us to learn more, continuing the search for higher levels of understanding. On the other hand, this same joy can also pigeon-hole us into the same ways of negative thinking, as held by those who partake in conspiracy theories, racialized reasoning, climate denialism, and the age-old debate between evolution and creationism. Part II begins by detailing the historical background of the Darwinian era and the controversies that inherently arose within the church. Bringing in cogency theory, Schaefer points out that the feelings associated with religious values (creation, in this case) or scientific evidence (evolution, in this case) can cause us to dig our feet into the sand and refute someone with the same passion we each feel for the subject(s).

How does society breach this barrier and advance when feelings are so strongly held and difficult to address? Schaefer points out that good science employs a healthy system of checks and balances which keeps emotions in check and emboldens an ardent desire to find the truth. This checks-and-balances system embodies what David Hume refers to as “cool passions” and William James as the “nervousness about error” (p. 36). Schaefer suggests Hume’s “cool passions” are a drive for knowledge, which is tempered by a desire for truth, and James’s “nervousness about error” represents a healthy fear of being wrong, so one strives to “shun error!”² However, providing more evidence on a topic will not necessarily bring unity because two people can analyze the same evidence in many diverse ways. Understanding and appealing to the feeling individuals embrace are the keys to unification. We must have a willingness to listen to

the “out-group” and try to find “shared vibes,” (Schaefer quoting Jose Estéban Muñoz [p. 224]).

As Christians made in the image of God, we are fearfully and wonderfully made, knitted from the core of our being by a loving creator from our mother’s womb (Ps. 139:13–16). The thought of being “knit” by our creator suggests craftsmanship in which no two creations are identical. Thus, we could surmise that cogency theory somewhat aligns with our personal identity in and from Christ. We each have our own spiritual gifts, life experiences, and nonnegotiable values which we bring to the table to *mess with* (another common phrase in the book) our interpretations of information. It is our duty as Christians, however, to take accountability for our thoughts and actions and respond to information by following the scriptures. If we remain faithful, limiting emotion as much as possible, we might overcome some of the political and societal challenges we face, as well as issues related to creation care and climate change. I hope that by understanding Schaefer’s cogency theory we can more effectively communicate information to a broader audience, inspire people to become more accepting of “others,” and become better able to understand how others think and believe.

One observation: *Wild Experiment* has a wealth of information. It covers the complex and interdisciplinary nature of many topics in the social sciences, theology, biology, and history. While I believe Schaefer did his best to condense information, the onus is on the reader to do some additional background reading. I recommend this book for anyone interested in epistemology, behavioral science, STS, or anthropology. It provides a context for knowledge making that most social science and social-science related researchers will find interesting.

Notes

¹Donovan O. Schaefer, “The Territories of Thinking and Feeling: Rethinking Religion, Science, and Reason with Alister McGrath,” *Zygon* 57, no. 1 (2022): 200–222.

²William James, *The Will to Believe and Other Essays in Popular Philosophy* (Longmans Green, 1907), 18.

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HISTORY OF SCIENCE

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POWER AND PROGRESS: Our Thousand-Year Struggle over Technology and Prosperity by Daron Acemoglu and Simon Johnson. PublicAffairs, 2024. 560 pages. Paperback; \$21.99. ISBN: 9781541702547.

In this book, two highly acclaimed MIT economists, and Nobel prize winners, make the bold claim that technological progress does not automatically result in

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prosperity for all. This is contrary to the claims of what they call the “technology bandwagon,” founded on the economic dogma arising from the rise in productivity and wages that occurred over the 20th century. Put simply, this dogma states that “when businesses become more productive they expand their output” which results in “a need for more workers” so they “get busy with hiring” and “collectively bid up wages” (p. 15).

To make its case, the book examines the relationship between technology, wages, and inequality over a thousand years with a view to determining what needs to be done to ensure that all parts of society share in the prosperity arising from innovation. From the opening chapter, it is clear that the authors are concerned about the current direction of digital technology, especially AI and its control by an elite few in Big Tech, what they term “a vision oligarchy” (p. 33) that needs to be “reigned in” (p. 34). Anyone interested in the ethics around technological development and its consequences on society, particularly recent developments in AI, will be interested in these perspectives.

Interpreting the economic and social data over a thousand years through to the present, the authors show how the economic prosperity of the post-World War II years was an outcome of a long struggle over the direction of technological progress and a balancing of power between employer and employee. Various examples are cited by the authors to justify their view that to create an economic elite involves a compelling vision and a social standing that affords opportunity to frame and set the agenda for debates on innovation, prosperity, human flourishing, and how to solve the world’s big problems. The influence of the powerful becomes self-perpetuating if they have access to influence policy makers and if their ideas and arguments are persuasive and have broad appeal.

Many illuminating economic facts are employed throughout the book. Typical is that, apart from famine years or other disturbances such as war, food production remained roughly in line with population growth until the early 19th century, and that, despite the innovation of the middle ages, the quality of life of a European peasant changed little over several millennia. Productivity improvements benefited a very small elite of kings and their retinue, nobles, and the clergy.

Turning to the Industrial Revolution, the authors claim the poor did not share the wealth generated through technology innovation because of the bias in automation which favored those wealthy enough to purchase machinery and because of the lack of worker representation in setting wages. They also argue that the “aspirant” class in this period focused on accumulating wealth for themselves and did nothing to alleviate the appalling conditions in the first half of the 19th century. In making

this claim, a glaring omission in the authors’ analysis of the 18th and 19th century in Britain is the influence of evangelicals in the reform movement, such as the Clapham Sect, and businessmen, such as Cadbury, who conducted his business differently to most, providing homes for his workers and education for their children. This omission is surprising given that these evangelicals shaped institutions and public opinion in ways that the authors view as crucial to bringing about a change of vision in business leaders and institutions, as well as in the public.

The change in direction of technology in the second half of the 19th century plus and institutional changes up to the post-World War II period, ground the authors’ conclusion that “the productivity bandwagon depends on new tasks and opportunities for workers and an institutional framework that enables them to share the productivity gains” (p. 218). A key 19th-century transition point was that the direction of technology shifted away from automation and people began to benefit more from the progress of technology. Key examples involve steam and electricity, which created new tasks and job opportunities in transport infrastructure and associated industries, such as steel and coal. Later, as electricity transformed factories by allowing distributed power rather than centralized steam power, there was a significant increase in the demand for engineers and white collar workers, pushing up wages. Contributing to this trend were institutional changes such as trade unions that gave greater bargaining power to workers, creating improved rent sharing between employers and employees. Political representation resulted in regulation with attendant improvements in conditions and public health. After World War II, there was a significant year-on-year increase in the “Total Factor Growth” measure of technological progress, and there was more inclusive economic growth with inequality declining rapidly as wages rose.

The closing chapters of the book focus on digital technology and AI, and detail how the 1,000-year struggle that finally resulted in a more inclusive prosperity began to unravel in the 1980s. Economic growth slowed and labor’s share of national income has been on a protracted downward trend in most industrialized economies. The share of wealth in the richest 1% of the population increased from 10% in 1980 to 19% in 2019. Several factors that brought about these changes are reviewed, including the advent of the digital age and the automation of manual labor that it afforded, along with a change in economic doctrine, the erosion of union power, and deregulation that has favored cutting labor costs. All of this, it is argued, has led to a change of vision, often expressed as, “the social responsibility of business is to increase profits” and to generate “high returns for their shareholders” (p. 271), views now taught in most business schools.

The authors also argue that the “move fast and break things” mentality is symptomatic of a shift in the direction of digital technology and that the current AI vision of technology leaders is an illusion. This vision claims that AI will benefit humankind, yet in reality, it sidelines humans while generating huge wealth by reshaping our view of digital and AI technology away from creating new tasks and opportunities toward automating work and cutting labor costs, re-creating the old two-tier society of the previous millennia. Nevertheless, while some data is provided to justify this assertion of the authors in the use of robotics, there is much debate about the real impact of AI among white collar workers, a topic about which the authors offer no projections of their own.

Central to the book’s thesis is the claim that a deterministic view of technology is a fallacy. Different choices could have been made in developing AI, away from automation and in directions more beneficial to society. However, what these directions might be are not really examined in any detail. A Christian redemptive approach to culture, while resonating with this non-deterministic view, would want to frame the argument in terms of responsible design choices involving stewardship, love for neighbor, and avoiding technological design that dumbs down humanity or leads to addiction or results in idolatry.

The final chapter outlines how Progressive movement activists, reformers, and journalists changed the views of the public, organized politically, and challenged institutions and government in America in the late 19th and early 20th century, leading to a redistribution of power and a change in direction for technological progress. A three-pronged formula is proposed as a way out of our current predicament: (1) “altering the narrative” and “changing the norms,” (2) “cultivating countervailing powers,” and (3) providing “policy solutions.” How this would work is then sketched out using examples, such as how the environmental movement worked to redirect technologies. The authors’ proposals for “Remaking Digital Technologies” were rather weak. Their suggestion that “improving productivity in workers’ current jobs” (p. 394) is precisely what companies such as Microsoft would argue they are offering through their “co-pilot.” I was also not convinced by the longer section on policy solutions that missed any reflection on proposed standards for responsible AI or policy proposals, such as the EU AI Act, details of which have been under discussion for the last few years.

In the complex world of social history and economics, it is often hard to prove a causal link between one factor and another, let alone when there are several variables in play. No doubt other economists and social historians will have a different take on the role of power and technological progress in shaping our world, and Christians

will want to provide an interpretation through the lens of biblical truth. This book does, however, provide a helpful counterpoint to the prevailing AI vision that innovation is essential for growth and prosperity and that regulation stifles progress.

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RADICAL BY NATURE: The Revolutionary Life of Alfred Russel Wallace by James T. Costa. Princeton University Press, 2023. 552 pages. Hardcover; \$39.95. ISBN: 9780691233796.

Most people, when asked, “Who is Charles Darwin?” would quickly respond, “Isn’t he the survival of the fittest guy?”; or at least make some reference to evolutionary theory. If the same people were asked, “Who is Alfred Wallace?” they probably would furrow their brows and make some guess (“Isn’t he the Braveheart guy?!”) or proclaim they had never heard of him. But Alfred Wallace (1823–1913) should get as much credit for formulating the theory of evolution as Darwin, and, I would guess, if he were pushed, *more* credit, according to James T. Costa, the author of *Radical by Nature: The Revolutionary Life of Alfred Russel Wallace*.

Costa’s 419-page tome (not counting chapter notes, figure credits, and index) was written to mark the 200th anniversary of Wallace’s birth. The author argues that Wallace is “not well enough known” in spite of many recent publications documenting Wallace’s life and accomplishments (p. xi). Costa attempts to make this book unique in several ways. He hopes that what he has written is an updated story of Wallace’s life; the book does include information from newly discovered notebooks and manuscripts. He also wanted this biography to explore Wallace’s life “as he lived it, in a narrative that traces the arc of the remarkable adventures, poignant personal life, and breathtaking sweep of thought of this singular human being” (p. xi). Costa intentionally includes vivid descriptions of the landscapes and geology of the places where Wallace collected his vast number of specimens, as well as the cultural context of his life and work.

The biography begins with Wallace’s life as a child. His family, although having limited finances, yet encouraged Wallace’s innate creativity, reading, love of the outdoors, and intellectual exploration. It is clear that Wallace’s keen sense of observation—particularly about place—was born along the River Usk in South Wales. As a young teen, Wallace traveled to London where he spent six years as a surveying apprentice. His curiosity and intellectual pursuits were nurtured in this environment in which he explored science—especially geology, entomology (he loved beetles!), and botany—in the

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Zoological Gardens and the Hall of Science. He even started lecturing and writing.

Costa's narrative about Wallace's first two decades of life includes not only information about how he was shaped as a scientist, but also how he was shaped politically and socially—especially by the Owenites, a utopian socialist group, known for promoting cooperation, free thinking, and social equality. They advocated a form of religion based on reason and human goodness. The Owenites were therefore unimpressed by societal hierarchies; their views likely emboldened Wallace to debate with anyone, regardless of social standing. Since Wallace was a self-trained biologist, his courage in engaging the scientific establishment probably stemmed, at least in part, from his interaction with the Owenites.

The majority of this book is dedicated to vivid and detailed descriptions of Wallace's travels, from South America to the Malay Archipelago. The level of detail, including lists and descriptions of collected species, may be overwhelming to some readers. I found the tales of the challenges Wallace faced, fascinating. I was captivated as I pictured how Wallace figured out ways to prevent ants from devouring his precious specimens; escaped shipwrecks; overcame disease, fire, hostile native peoples, injury; avoided snakes; and more. Through all the challenges, Wallace collected, preserved, and sent his specimens back to Great Britain, along with drawings, descriptions, travelogues, and scientific papers. Some of Wallace's drawings as well as photographs and other figures are scattered throughout the book. In the center, there is a section of color photographs from Wallace's notebooks, family portraits, and some of his most interesting collected species.

Costa masterfully reminds readers of the relationship between Wallace's early interest in geology and the theory he was formulating as he connected the places he was in and the species he was collecting. Wallace's deft mind was never satisfied with thinking about discoveries in isolation—everything was related, and he carefully looked for connections between landscape and the creatures that inhabited it.

Toward the end of Wallace's travels, the author nicely begins to unfold the relationship between Wallace and Darwin, including, obviously, the publication of their seminal papers outlining their theories of evolution by natural selection. Costa describes their relationship throughout the book as cordial, even friendly, with Wallace never tilting toward any jealousy that it is Darwin's name more than Wallace's that is so tightly connected to evolutionary theory—even when their papers were first published. I found the correspondence between these two brilliant men fascinating. Darwin was strongly supportive of Wallace's scientific efforts.

Wallace's return to Great Britain after almost two decades of travel did not mean he slowed down. In addition to avid gardening with his wife Annie, with whom he had two children, Wallace sorted, studied, wrote, and spoke. His writings included papers, books, letters, and more. He wrote about his vast collections, published his travelogue, wrote on human evolution, biogeography, and a coevolutionary framework for Earth and life (p. 289). His writings were not restricted to science. Wallace wrote about spiritualism quite extensively, much to the disappointment of the scientific community (p. 314). He even seems to fall prey to a God of the gaps theology (although more of an intellectual "higher power" of the gaps theology for Wallace) when he claimed that human brains were too complex to arise by evolution alone.

Wallace's writings also heralded social justice causes, harkening back to the influences of Owenites. His trip to the United States sparked interest in women's education and rights. During this trip, he traveled to California and met John Muir. These experiences were important in generating his new interest and in his writings about environmentalism, conservation, and land ethics. Toward the end of his life, he even began thinking and writing about extraterrestrial life. Wallace remained an active and vibrant scholar until his death at nearly 91 years old. His last two books were published during the last year of his life.

It's quite clear to me upon reading this biography that Costa is a "Wallaceophile." If I were to find something to criticize about this book (besides the sometimes-exhaustive descriptions of Wallace's collections), it would be that Costa is quite forgiving of any of Wallace's shortcomings. With the exception of chapter 12, "A Tale of Two Wallaces?," in which Costa describes Wallace's extensive foray into spiritualism, Costa seems to write about Wallace in the most favorable light possible. Any suggestion, for example in Wallace's own writings, that he thinks of the people groups he encountered during his travels as less human than civilized Europeans, is excused. Perhaps Costa is right. Wallace was an extraordinary person, one I came to appreciate deeply after reading this book, but we all have our blind spots and Wallace was no exception. In spite of this, I recommend this book to anyone wanting a deeper understanding of one of the most important scientists of the 19th century. It gave me a profound appreciation of the physical danger involved in procuring such an extensive collection of species, the intellectual depth required to pull his vast observations and experiences into a compelling theory, and the intellectual risks Wallace was willing to take to synthesize all his life's experiences. Wallace's life is one worthy of a book of this length and detail.

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THE GLOBE: How the Earth Became Round by James Hannam. Reaktion Books, 2023. 376 pages. Hardcover; \$27.00. ISBN: 9781789147582.

One might summarize this book with the classic questions: “What did they know? When did they know it?” That’s far too brief a summary, but those are the questions this book addresses, along with how knowledge of the globe spread. James Hannam has given us a well-documented history of belief in a spherical earth from ancient times to the present century.

The author is a British historian of science with a physics degree from Oxford and a PhD in history and philosophy of science from Cambridge. His best-known previous book is *God’s Philosophers: How the Medieval World Laid the Foundations of Modern Science* (in the UK), and retitled in the US as *The Genesis of Science: How the Christian Middle Ages Launched the Scientific Revolution*. While his religious beliefs were not completely clear to this reviewer from reading the present book, some online postings indicate he is a Catholic.

Globe is divided into 23 chapters, plus an introduction and an afterword, in about 300 pages. These are followed by about 30 pages of references documenting his sources and 16 pages of bibliography, as well as a thorough index. As one might expect, the chapters are arranged roughly chronologically from ancient Babylon and Egypt up through the Greeks, Romans, Medieval Europe, and on to today. There are separate chapters dealing with India and China throughout many centuries, as well as Persians, Judaism, Christianity, and Islam. The information is often densely packed and it is possible to get lost in details. Historians will find all the details and references they could wish for, while more casual readers may want to look at the bigger picture and pursue details only in sections they find of particular interest.

Today we all know the earth is spherical, but as we look around us on a daily basis the earth appears flat. In ancient times, the idea of a flat earth seemed entirely reasonable. So how did the idea of a spherical earth arise? There are a number of simple observations indicative of this, but many people were not in a position to recognize them. When ships head out to sea one can see the evidence as ships’ hulls disappear from view before the tops of their masts. The shadow of the earth on the moon during a lunar eclipse is always curved, but one must understand that the eclipse is a shadow, not an astrological omen. Anyone who travels large distances can see the changes in the night sky as northern stars fall below the horizon when one heads south and southern stars appear higher, but the distance traveled must be hundreds of miles, not tens of miles. All these pieces of evidence came together for the ancient Greeks, but not for anyone else.

I will summarize some of the development, hoping this will spur PSCF readers to dig into the book itself.

Both ancient Babylon and ancient Egypt built up considerable astronomical knowledge, the former for astrological purposes and the latter to calibrate a solar calendar to predict Nile floods. The shape of the earth was not really a concern for either. There were Greeks, however, who thought about the shape of the earth. One must here be cautious, since claims that Greeks believed in a spherical earth very early may be translation confusions (the Greek word for “round,” as in English and Latin, can mean either a disk or a sphere), and other claims are erroneous attributions by later writers. Nevertheless, by the fifth century BC, the Greeks had developed a model of the flat earth as a circular disc surrounded by a spherical universe. In this model, the sun was below the disk at night, but its light still illuminated the moon and the shadow of the disk could cause a lunar eclipse. Furthermore, the moon itself could block one’s view of the sun, causing a solar eclipse. Thus, eclipses were recognized as physical phenomena rather than omens; this observation was major progress in scientific understanding.

By the fourth century BC, there were apparently ideas of a spherical earth discussed among a number of Greeks, and some of Plato’s writings indicate he believed this. Hannam draws a distinction between believing, as Plato did, and knowing, as Aristotle did. Knowing involved a good deal of evidence and an underlying theory (even though much of Aristotle’s theory was actually wrong). Hannam therefore credits Aristotle as the first to know the earth was spherical. This knowledge then spread in the lands conquered by the Greeks, and by their successors, the Romans, a few centuries later.

PSCF readers may be most interested in the chapters dealing with Jewish and Christian beliefs. Hannam indicates that he considers both the Old and New Testaments to have been written from a flat earth perspective. He rarely deals directly with biblical texts but does raise an interesting point regarding passages dealing with the temptations of Christ. Matthew wrote that Satan took Christ to a high mountain to view the kingdoms of the world (possible only on a flat earth), whereas Luke (presumably having had a good Greek education) says Satan took Christ to a high place. The wording in the original Greek text is definitely different, with the latter allowing the possibility of a vantage point above a spherical earth while not confusing readers who believed in a flat earth. We probably will have to wait until we reach heaven to learn what happened and whether this wording difference is significant.

This reviewer, like many others, was long ago taught the myth that Columbus had to convince Spanish authorities that his sailors were afraid of sailing off the edge of

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the earth, and that the earth was spherical. The reality was that Europeans at that time were well aware the earth was spherical, and the major issue for Columbus and Spanish authorities was how long the trip would be and whether the ships could carry enough food and water for their crews. The myth relating to Columbus traces mostly to a highly fictionalized biography of him by Washington Irving, amplified by others who wanted to make Christians (especially Catholics) look bad by pushing the false idea of warfare between science and Christianity. Unfortunately, the myth has been very slow to die out.

Who is this book for? I could imagine a history of science course for upper-level undergraduate or graduate students based on it, or selected parts being assigned in such a course. The audience for the book, however, should be much larger. Readers with an interest in history of science or philosophy of science would probably find it interesting and would learn from it. Those who primarily want the bigger picture may want to skim over some details. Anyone who wonders how the spherical earth idea reached and was received by non-western cultures is encouraged to read the book.

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PHILOSOPHY OF SCIENCE

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THE ELEPHANT AND THE BLIND: The Experience of Pure Consciousness—Philosophy, Science, and 500+ Experiential Reports by Thomas Metzinger. MIT Press, 2024. 648 pages. Paperback; \$80.00. ISBN: 9780262547109.

What is consciousness and how can science fruitfully study it? In this book, Thomas Metzinger proposes that the experience of pure awareness occurs without “subjectivity” and will help science uncover the “core causal factors” underlying consciousness. Science can then build on this minimal model for a more comprehensive theory. However, consciousness studies face a major problem: “Three decades after the Association for the Scientific Study of Consciousness was founded in 1994, we still do not even know (or cannot agree on) what precisely it is that needs to be explained” (p. xiv). Toward a solution, Metzinger contends that pure awareness is the simplest kind of experience, namely, the experience of awareness *as such*. With this hypothesis, science might verify whether pure awareness is the phenomenal-neurological boundary between the conscious and the unconscious. Believing that meditation helps people access pure awareness, Metzinger surveyed over 1,400 meditators who have experienced this phenomenon, labelling this the minimal phenomenal experience project (MPEP) and,

in this book, reports more than 500 of the 841 narratives from the project. The result: he identifies phenomenal markers that help neuroscience map the causal correlates common to all conscious experiences.

Grouping meditative reports by chapter, Metzinger describes experiences of awareness that come from diverse meditative practices. Though he includes statistical analysis (from the MPEP), he concentrates on filtering reports by qualitative criteria. In each chapter, he selects reports from the narrative part of the survey and then groups them into phenomenal categories. Metzinger investigates over thirty experiences, some of which overlap with ordinary wakeful life (e.g., peace). Others (e.g., luminosity) are less familiar. Several are even difficult to describe without paradoxical metaphor (e.g., timeless change). Intended for a general audience, the chapters are readable and, typically, brief. Since jargon is unavoidable, a glossary clarifies new and abstract concepts. Other virtues of the book: Metzinger proposes a methodology for neuroscience to isolate and reproduce pure awareness, and he also suggests philosophical lessons about how pure awareness informs the theory of evidence. Overall, his reflections might inspire psychology, neuroscience, and philosophy with new phenomenal concepts.

As his main contribution, Metzinger introduces minimal phenomenal experience (MPE) as a trustworthy way of investigating consciousness. Such experiences are the simplest kind – causally and experientially – that we in fact have. In their narrative responses, meditators report either no discernible mental contents (i.e., an experience without a noticeable object) or contents “along with the deeper nature of consciousness” (p. xiii). According to Metzinger, pure awareness is a candidate MPE. He speculates that pure awareness might be the experience of the capacity to know – but without any known object. In his scientific aim to isolate MPE, Metzinger makes two methodological assumptions: (1) Introspective knowledge defines the target for the scientific investigation of consciousness; and (2) if a state is experientially simple, its neurological basis must be correspondingly simple. Without these assumptions, his study cannot help science uncover the neuro-correlates of conscious experience.

Metzinger weaves three major themes throughout his book. First, pure awareness occurs as a global way of being conscious, without discernible contents, and, at times, as a state with ordinary experiences as contents. In full-absorption episodes, for example, meditators report being conscious but without thought and perception, without a localized body-experience, and without felt agency and self-awareness. Meditative experiences in which one is fully absorbed are ineffable but later reportable. If they are states of pure awareness, the only reportable feature is the quality of awareness. As a state

combined with recognizable contents, pure awareness transforms the meditator's perspective; for example, with heightened senses, one feels as though one sees the world as it is for the first time. The visual contents and the quality of awareness are both present. As its global modes and states suggest, if pure awareness involves the most generic phenomenal quality, then experiences are irreducible to contents specific to objects and their properties.

Second, pure awareness alters meditators' familiar embodied experience as thinking, active selves. Awareness, for example, widens as though the body expands. Bodily boundaries dissolve, attenuate, or form the limit of awareness, leading to a felt spatial expansion and oneness with everything. Senses merge, and the self-aware subject disappears. In particular, there is neither a spatiotemporal frame of self-reference nor the experience of a localized self who knows distinct objects. Ordinary wakeful experiences with their objects seem neither internal nor external. Everything but consciousness itself has a dreamlike virtuality. In addition, an impersonal observer—a “bigger” presence than the self—knows what one once knew as his or her wakeful self. Such “virtual” and “nondual” experiences, Metzinger believes, show that the purely aware are not self-aware. If so, being conscious doesn't necessarily involve self-awareness. In practice, a meditator can't mindfully observe the experience of pure awareness, which is just something one falls into and later recalls. Detractors might reply that meditators still have a perspective and are peripherally aware of themselves but without attending to themselves.¹

Third, pure awareness combines with an experience of knowledge that is, given the above, independent of self-awareness. Based on this, Metzinger contends that the brain simulates our self-awareness, which is really a “complex hallucination” (pp. 80–81, 302–6, 353–71). Put differently, our internal “agent model” is a misleading “hologram,” not a mental subject with self-knowledge. The “I” who thinks, perceives, plans, and acts is a fiction. Apparent experiences of the self don't merely fall short of knowledge; the purely aware experience their agent model *as a representation*. This internal modeling is normally transparent: a “virtual self appears, and it seems to be self-aware. Apparently, it really knows that it knows but the virtuality itself, the ‘as if’ quality is not experienced” (pp. 302–3). As the brain makes mere possibilities look real, a world outside us seems to appear and we experience “ourselves” so reliably that we have no experience of ourselves as a model.

Metzinger eliminates the self altogether from his ontology, a position that seems inconsistent with Christian teaching. The Bible addresses the nature of consciousness indirectly by assuming that we are moral agents and so capable of rational choice and personal knowledge.²

We are significantly free—not only responsible for our actions but, at times, also worthy of praise and blame. We can, for example, resist our strongest urges for the sake of doing the right thing. A degree of free will justifies praise and blame—and, therefore, the possibility of reward, punishment, and atonement. Moreover, friendship with God is our greatest well-being. Friendships with good people and the shared worthy goals they presuppose involve self-knowledge and agency. If, as Metzinger claims, we don't have the mental properties that define personal agency and knowledge, Christian teachings that presuppose moral agency are false.

Despite Metzinger's careful research, I see no reason to accept his denial of the self, which implies that self-knowledge is merely apparent. His appeal to hallucinations is unconvincing for several reasons.³ We can be fooled by non-veridical experiences, such as hallucinations. I can't always tell when I'm hallucinating. However, I can discover that I'm hallucinating X by investigating how X appears. Even if I can't *now* distinguish a hallucination from a veridical experience, it doesn't follow that they are indistinguishable and, therefore, the same experience. Moreover, hallucinations present properties—properties that the objects we hallucinate apparently have. If these properties are I-properties (e.g., purposes), they can't exist on their own. Whatever has them is an active, viewing subject—I or you. In addition, if meditators know their self-model *as* a model, they are still self-aware. No one can be aware of a model as such without also being aware of the thing modeled.

Why take meditative reports seriously, especially ones with religious framing that filter the experience? In answering this question, Metzinger implies that we can distinguish religious filters from the experience itself and thus sift the experience from its interpretation. After all, meditative reports are descriptively rich and arise out of diverse traditions. In his epilogue, however, Metzinger applies his findings about pure awareness to ethics and rejects the religious perspectives through which many meditators interpret their experiences. He believes that an ethic without religious belief, especially belief in the afterlife, is openminded. But without justifying his naturalism, Metzinger's stance remains ideology. Religious or not, ideology helps us integrate our experiences with our lives and, if true, clarifies those experiences. Religion doesn't necessarily distort them—although Metzinger claims otherwise.

Often overlooked by Western science, Metzinger explores features of pure experience that alter how we think about consciousness, especially the way it relates to the body, knowledge, and the self. The book is well worth the read for all interested in the phenomenology and science of consciousness.

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Notes

¹Brandon Rickabaugh and J. P. Moreland, *The Substance of Consciousness* (Wiley-Blackwell, 2024), 99–100.

²See Richard Swinburne, *Responsibility and Atonement* (Oxford University Press, 1989).

³See Walter Hopp, *Phenomenology* (Routledge, 2020).

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SCIENCE AND FAITH

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CONJUNCTIVE EXPLANATIONS IN SCIENCE AND RELIGION by Diarmid A. Finnegan, David H. Glass, Mikael Leidenhag, and David N. Livingstone, eds. Routledge, 2023. 346 pages. Hardcover; \$128.00. ISBN: 9781032139685. Ebook; \$42.36. ISBN: 9781003251101.

“If scientists have explained a phenomenon, where’s God?” The basic false forced choice underlying this question is that things happen either (1) because of divine intervention apart from nature’s properties and processes, or (2) because of the operation of those properties and processes with no divine influence. This false forced choice underlies God-of-the-gaps reasoning: scientists’ explanations leave God nothing to do. For instance, arguing against those who think that cognitive science explanations have done away with religion and God as superfluous, James Jones notes that “these findings do no such thing ... The debunkers seem to be assuming that if natural processes are at work, nothing else can be. But no argument is offered to support that assumption” (quoted in Gijsbert van den Brink’s essay, p. 218). This is an example of the false forced choice at work, an unexamined assumption of much of the sciences-faith literature. (Indeed, van den Brink seems to cede too much to this false forced choice too often.)

The edited collection, *Conjunctive Explanations in Science and Religion*, explores this milieu. The contributions are helpfully arranged in dialogue with essays and responses by pairs of authors. This arrangement invites the reader to join the conversation with open, critical ears to hear. Another strength of the book is the range of topics addressed by the authors: There are discussions of scientific and theological methodologies with respect to explanation, the question of design in evolutionary biology, consciousness, emergence, psychopathology and religious experience, role of scientific explanations in Christian faith, divine action, Ockham’s razor, and how distinct scientific and religious explanations should be.

A weakness of the book is that most authors write and think in terms of “science” as a unitary explanatory enterprise instead of more accurately framing discussion in terms of multiple scientific disciplines—sciences (Alister McGrath’s essay is a welcome exception). Explanations can vary widely across the subdisciplines of physics

and among the fields of physics, biology, and psychology. The homogenizing of “science” in the abstract is at odds with the variety of scientific explanations authors deal with in specific cases of different disciplines. One could raise a similar complaint about the homogenizing term “religion” when the authors are dealing with different theological and experiential aspects of Christian faith (although David Brown’s contribution seems to be an exception, focusing more on what is often critiqued as the “God of the philosophers”).

A crucial complex question is how different explanations aimed at distinct questions relate to one another when focused on the same subject matter. An example is explaining why water is boiling in the tea kettle. A thermodynamics explanation would involve features such as heat, pressure, temperature, and volume of water. Meanwhile, a purposeful explanation would be in terms of my desire for some tea. These two explanations involve the same subject matter but are responding to different questions about the water boiling. A conjunctive explanation recognizes that thermodynamics and purpose questions are not only consistent with each other, but both explanations tell us more about the event in question than either explanation alone.

Although the book’s authors typically do not develop this point (McGrath is an exception), scientists often engage in conjunctive explanations when there are multiple factors involved in phenomena (e.g., materials sciences, mechanics, electromagnetism, gravity, and thermodynamics in explaining an experiment and its outcomes). Moreover, it is always the case that scientific explanations leave out numerous factors and stability conditions defining the context making scientific explanations of phenomena possible. Philosophers of science have been helpful with filling in many unstated factors and conditions in scientific explanations. The implication is that conjunctive explanations in the sciences always involve more than just scientific materials and factors.

There also is no consensus about what a conjunctive explanation is (not surprising since there is no consensus about what an explanation is, whether in the sciences, theology, philosophy, or any other fields of inquiry). Several contributions illustrate that we are talking about different ways of knowing, the kinds of questions and explanations relevant to those ways of knowing, and how to put all this into fruitful conversations. Most pressing for the contributors to this book—and more controversial among Christians and non-Christians—is what it means to relate different explanations in sciences-faith contexts: If we have a well-attested scientific explanation for some phenomenon, the diversity of life on Earth for instance, what, if anything, can a theological explanation add (explored from a historical perspective in David Livingstone’s and Rope Kojonen’s essays)?

Theologian Andrew Torrance's essay helpfully argues that a scientific explanation of coming to Christian faith is compatible with a further philosophical/theological explanation from a materialist atheist perspective, a physicalist perspective, or one involving the Holy Spirit's work in a person's life. There is nothing about neurological influences in a person coming to faith that commits one to a materialist explanation being exhaustive. This inference requires further metaphysical assumptions such as reductionism and/or causal closure of the physical to any nonphysical factors. Tom McLeish's essay gives a good discussion with examples of why reductionism often fails in physics (so, why think it holds in any other domains as a general rule?).

Although space does not permit discussion of all the chapters in this book, Torrance's and McLeish's essays illustrate how it is possible to fruitfully situate scientific explanations within larger philosophical and theological frameworks that enhance our understanding of God's good creation. Christians, at least, do not have to be forced to choose between scientific and theological explanations; rather, we can foster mutually beneficial conversations among them.

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THE FAITHFUL SCIENTIST: Experiences of Anti-Religious Bias in Scientific Training by Christopher P. Scheitle. New York University Press, 2023. 224 pages. Hardcover; \$35.00. ISBN: 9781479823710. Paperback; \$28.00. ISBN: 9781479823727. Ebook; \$35.00. ISBN: 9781479823741.

In *The Faithful Scientist*, Christopher P. Scheitle explores the identities and experiences of scientists-in-training and the impact of religion in their lives. The book makes a compelling argument about the connections among religion, race, gender, and diversity in science. Diverging from previous studies of scientists and religion, Scheitle focuses exclusively on graduate students training for scientific (biology, chemistry, physics) and social scientific (psychology, sociology) careers. The book combines quantitative and qualitative findings, drawing on 1,300 surveys and 65 in-depth interviews with both religious and unaffiliated respondents in the United States. Over six chapters, Scheitle pairs a unique dataset of statistical insights with rich quotations highlighting the lived experiences of students in the sciences. These chapters provide readers with an understanding of the religiosity of scientists-in-training, their beliefs about the relationship between religion and science, the stigma that religious students may experience in academic settings, the relevance of religion to peer and advisor relationships, the motivation that religion can provide to pursue scientific work, and the influence family life can have on the experiences of graduate students as they

navigate their identity as developing scientists and as religious individuals.

Scheitle argues against a number of common misconceptions about the relationship between religion and science, such as the idea that top scientists who work at or attend more-prestigious institutions are more likely to be areligious (he finds minimal difference in religiosity based on institutional prestige), or that most scientists see religion as conflicting with science (less than a third of scientists in training hold this view, with the remainder seeing them as either independent or collaborative realms). These insights are likely familiar to those who study the intersection between religion and science or have read previous work by Scheitle, but these findings are also paired with many original insights unique to his sample of graduate students. Among these is discussion of the importance of the advisor-advisee relationship in graduate school and the potential salutary influence of having an advisor of the same faith. Considering the strong positive association between religiosity and the desire to start a family (among Scheitle's sample 75% who report being very religious say having children is very important to them compared with 29% who identify as non-religious), he also shows the increased importance of a department culture that values family and work-life balance for religious graduate students.

A particular strength of Scheitle's work is the way he frames religion as an often-overlooked dimension of diversity in scientific careers. As he shows, not only is religion important to the identities, motivations, and ethics of a sizable minority of graduate students in science, but it also overlaps significantly with other identities that are already underrepresented in scientific careers, such as racial and ethnic minorities, as well as women in the case of some natural science fields. Stigma or instances of being treated with less respect as graduate students due to gender or race were reported by 83% of women, 89% of Black students, and 74% of Hispanic students. For religious graduate students, mistreatment due to race and gender may be compounded by the fact that very (64%) and moderately (46%) religious students reported being treated with less respect due to their religion. In addition to leading students to question their identity as future scientists, religious students who felt they have been treated with less respect were also faced with the dilemma of whether to conceal their religious identity. As with race and gender, discrimination due to religion may lead to fewer students pursuing their field at a higher level, reinforcing their marginal status in the discipline.

One area in which the reader may question the generalizability of Scheitle's findings is the selection of universities from which he drew his sample. Respondents exclusively attend universities in the top 60 (according to *US News* rankings) of their discipline. Given that in some disciplines such as chemistry there are around

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200 schools offering a PhD in the field, it would be reasonable to ask whether these programs are truly representative of the range of student experiences. The top 60 universities in a given field may be a model that is emulated by that discipline as a whole and is therefore an adequate sample, but it would have been interesting to see Scheitle discuss this dynamic further. There are also a number of potential policy implications from these findings that could have been covered in more detail.

The Faithful Scientist provides a strong background on the relationship between religion and scientific training revealing the potential challenges that religious graduate students face. Scheitle's research will appeal to a number of different audiences including sociologists, historians of science, and theologians. It would be a benefit to seminary classes on science and religion. Further, the richness of the qualitative data makes the book very readable for a general audience interested in learning more about the relationship between religion and science.

Notes

¹Elaine H. Ecklund et al., *Secularity and Science: What Scientists Around the World Really Think About Religion* (Oxford University Press, 2019); Elaine Howard Ecklund and Christopher P. Scheitle, *Religion vs. Science: What Religious People Really Think* (Oxford University Press, 2018).

²J. Shulman, "Survey of Ph.D. Programs in Chemistry," American Chemical Society, accessed April 10, 2024, <https://www.acs.org/education/students/graduate/survey-of-phd-programs-in-chemistry.html>.

Reviewed by Brenton Kalinowski, PhD candidate, Rice University, and Elaine Howard Ecklund, Herbert S. Autrey Chair in Social Sciences, professor of sociology and director of the Boniuk Institute for the Study and Advancement of Religious Tolerance, Rice University, Houston, TX 77005.

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SCIENCE AND FAITH IN HARMONY: Contemplations on a Distilled Doxology by Sy Garte. Kregel Publications, 2024. 256 pages, foreword by Sean McDowell. Paperback; \$21.99. ISBN: 9780825448157.

The author of this book of meditations, Sy Garte, is a now-retired distinguished biochemist who held tenured university positions at NYU, Pittsburgh, and Rutgers. He also served in administrative roles at the NIH and the Uniformed Services University of the Health Sciences. As an author of over 200 scientific papers, he is a first-rate scientist who brings nearly unparalleled scientific expertise to matters of concern for Christians who have an interest in scientific topics. Of particular note, Garte became a Christian quite late in his scientific career (in his 60s), finally rejecting the atheism he had espoused most of his life. (His conversion experience is described in his book *The Works of His Hands*, which has a foreword by Alister McGrath.) This is therefore quite a unique devotional book, for it reflects a full life of secular

scientific experience and practical wisdom combined with the zeal of an adult convert. It is clear that Garte has had an inquiring mind and broad interests throughout his entire life, which help keep the book fresh and full of surprises. He grew up in Brooklyn where his mother was a piano teacher and his father a mandolin-playing chemist. Immersed in music, he attended the prestigious New York High School of Music and Art, but later discovered his greater talents lay in science.

There are 44 meditations (or "contemplations" as the sub-title refers to them), each about five pages long. In these, Garte expounds on an interesting scientific fact or idea and links it to some aspect of Christian life, doctrine, or theology. As in his introduction:

The forty-four chapters are vignettes in various styles. Some include personal stories of my experiences as a scientist, first as an atheist and then as a Christian. And some discuss aspects of science that may be new to you, and even inspiring, in how they relate our faith to God. (p. 14)

There are some connections between the meditations, but generally they may be read in any order, or read only periodically without need of remembering exactly what came before.

One aspect of this book I found particularly helpful are the several resources Garte provides at the end of each chapter for further exploration of the topic of the meditation—usually a scientific topic but sometimes theological or philosophical. There are generally one or two references from two or three of the following categories: books, articles, blogs, and videos. The web-based references are conveniently linked to the author's website (sygarte.com). The videos in particular are excellent learning and teaching resources.

This book is suitable for many audiences, but I would say two categories would be especially well served: non-Christian scientists and engineers, and Christians who have an interest in science but have not done much reading in science and faith. Garte's primary goal as stated in the introduction is to demonstrate the harmony of science and Christianity, thus addressing the perceived conflict between the two, which he believes continues to be a stumbling block for many non-Christians. For a Christian reader, however, Garte's expert treatment of a wide variety of scientific topics and their ties to the Christian life is truly devotional and worshipful. "Distilled doxology" is the phrase Garte uses to describe his project, and indeed he is able to repeatedly take a different scientific topic, strip it down to its basics so that any educated lay audience can understand and, with his fertile imagination and life experiences, tie it to Christianity in original ways, producing a sense of wonder and appreciation for God's providence and grace.

Longtime readers in science and theology will be familiar with most of the topics and themes presented by Garte, but I found that his original approach and expertise were quite interesting and offered some fresh angles. For example, in one meditation he describes gene regulation networks and makes an analogy to Christian social networks and the body of Christ. In another meditation, Garte connects a discussion of the peer-review process in science, including ethical guidelines, with the ethics of living in Christian community and the judgments and corrections that are sometimes necessary there.

Some might describe the final wrap-up sentences of each meditation as too saccharine, but I found that these concluding sentences testify to the pure joy and thrill that Garte feels about his relatively new-found Christian faith—a sentiment that is bursting throughout this entire book. As I read through the meditations, I often found myself reflecting not only on the grandeur of creation and the goodness of God, but also on how amazing it is that the power of the Gospel could convert and call to Christian service an atheist scientist as prominent as Sy Garte.

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TECHNOLOGY

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THE SINGULARITY IS NEARER: When We Merge with AI by Ray Kurzweil. Viking, 2024. 419 pages. Hardcover; \$20.21. ISBN: 9780399562761.

In summer 2014, on my advisor's advice, I began to explore transhumanism as a dissertation topic. I soon encountered Ray Kurzweil's 2005 book, *The Singularity Is Near*, and its forecast that around 2045 computer systems would attain superhuman intelligence. This development, according to Kurzweil, would lead to an age of rapid and unpredictable progress known as the "Singularity." Fundamental changes in the human condition would follow.

But there was a problem: whenever I mentioned Kurzweil, my frustrated advisor would respond, "Ugh! Why should we pay any attention to Ray Kurzweil? How could *he* ever know what will happen in 2045?" (I took such questions seriously, but maybe my advisor just wanted me to think!) My best answer was, "He may be a kook, but many accept his claims. Kurzweil's ideas are affecting society now, so they are worthy of study."

Today, with ChatGPT and other large language model (LLM) systems in everyday use, and more computational tools on the horizon, artificial intelligence (AI) has become a major factor in society. Its benefits are changing how people and organizations operate, how ideas

are generated and refined, the way we identify and solve problems, and even how we go to the grocery store. Conversely, AI is a worry to many people, such as educators concerned about its impact on student learning; Noam Chomsky called ChatGPT "plagiarism software." In this context, Kurzweil's new book is a timely—and important—update on his ideas from nineteen years ago.

Kurzweil's introduction and first chapter reiterate his premise that information is the very essence of reality. He sees cosmological history as a series of information-driven epochs—from epoch one, "the birth of the laws of physics," soon after the Big Bang, to epoch six, "where our intelligence spreads throughout the universe" (pp. 7–8). Today, Kurzweil argues, we are entering epoch five, driven by dramatic increases in the cost-performance of computers. It will be, according to the book's subtitle, *When We Merge with AI*.

In chapter two, "Reinventing Intelligence," Kurzweil presents a brief history of AI before drawing comparisons between digital computers and the human brain. His focus is the development and future of brain-computer interfaces. Today's Neuralink trials will, according to Kurzweil, lead to a tomorrow when neocortex functions will occur in hybrid systems, biological brains working seamlessly with artificial computation machinery.

Chapters three through six analyze the potential for AI to exert an influence on important areas of human existence, imagining how they can be accommodated: consciousness and personal identity, quality of life, employment and meaning, and mental health and physical well-being. Kurzweil addressed these things in *The Singularity Is Near* and other books, but in *Nearer* he goes into greater depth, and in a more straightforward and factual manner. If his previous work was a Singularity sales pitch, his 2024 text is framed as an update or progress report.

In chapter seven, Kurzweil addresses forms of "peril" that will intensify with progress toward the Singularity. He recognizes that AI can be weaponized by terrorists and hostile states, but he does not directly address the possibility that sentient computers could become hostile toward human civilization. (For that possibility, see Nick Bostrom's 2014 book, *Superintelligence: Paths, Dangers, Strategies*.) Ever an optimist, Kurzweil believes people—individually, corporately, and working with AI—can identify and overcome such threats.

Kurzweil's final chapter is a six-page "Dialogue with Cassandra," an exchange between Ray and an unidentified being, perhaps an AI. Their discussion touches many top-level concerns that people express about futuristic technology. The dialogue effectively summarizes Kurzweil's views of the past and hopes for the future.

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The book concludes with a 20-page appendix, 88 pages of notes and references, and a 19-page index.

My advisor's views notwithstanding, I am much more impressed with Kurzweil now than I was before, though I still have many reservations about his claims. *The Singularity Is Nearer* is a much better book, though it must be read with an attitude toward critical thinking. No human—or AI—can predict the future with accuracy, but it is often possible to identify consequences and trends that will affect it. Even when they are wrong, futurists help us think through important matters in advance, in the here and now. Superhuman AI and the transhumanist future that may proceed from it speak to matters of theological importance. Believers would do well to consider these matters in advance, so I recommend *The Singularity Is Nearer*, but with some cautions.

First, although Kurzweil has some religious sensibilities, he is an atheist. His attitude toward religion was expressed long ago in *The Singularity Is Near*. Against its central place in human history, he dismisses religion as “deathist rationalization—that is, rationalizing the tragedy of death as a good thing” (p. 372). Asked if God exists, his (in)famous answer was “Not yet.” He is waiting for his AI god to appear after 2045 in some kind of post-secularity superintelligence.

Kurzweil's atheism undermines his arguments. Unlike so-called Christian transhumanists, who also aspire to transcend the human condition through technoscience, his notions of transcendence are without roots. He relies on human conceptions of good or bad, ethical or not, without links to God or anything else that is objectively transcendent. So, he would optimize many things, but it seems progress and optimization only mean getting something he wants, nothing more.

Second, even before his Singularity, Kurzweil believes in predestination. He consistently describes computation progress as *inexorable, inevitable, necessary, destined, fated*, and other terms of certitude. He correctly anticipates social disruptions on the way to the Singularity, but he is unyielding about their resolution; society shall yield. Limits are intolerable and unsustainable; for in Kurzweil's view, informational determinism is built into the cosmos. Yes, short-term delays are possible, but our technological destiny shall have its way.

Third, like its predecessor, *The Singularity Is Nearer* is a sales pitch, though more informative. Consider again what transhumanists promote: a future that is, quite literally, dehumanized. Although created in the image and likeness of God, with physical bodies like our Lord Jesus, biological human beings are to be replaced, our cognitive faculties disembodied, our minds uploaded into computer systems. However, when the Singularity is past, will anyone other than transhumanists regard the

new world's inhabitants as human? Kurzweil's 2005 subtitle, *When Humans Transcend Biology*, reveals the goal, but transcendence that eliminates our biology is inherently dehumanizing.

The Singularity Is Nearer has a softer tone, with a subtitle less offensive to those who love humanity: *When We Merge with AI*. It seems that “we” are retained. The claim is that human beings have always loved their tools, haven't they? So, transhumanists aren't doing anything different! Nothing has changed, even as they would fundamentally change our existence. Kurzweil and his allies want to minimize resistance to AI bliss, so for marketing purposes, human life, faulty as it is, will remain, at least in their rhetoric. Nevertheless, the book makes it clear that AI will dominate our being, progressively changing and eventually eliminating our created nature. Kurzweil's dream remains inhuman.

The transhumanists leave many important factors out of the picture. Their future is not defined, yet they claim it is inevitable? May not society say no? Should not governments regulate AI? What does Christian faith have to say about technology and the future? With concerns like these unanswered, Kurzweil's claims are empty, distasteful, and impossible to swallow. Perhaps my advisor was right after all.

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THEOLOGY

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DETERMINED: A Science of Life Without Free Will by Robert M. Sapolsky. Penguin, 2023. 528 pages. Hardcover; \$35.00. ISBN: 9780525560975.

and

DOI: <https://doi.org/10.56315/PSCF3-25Mitchell>

FREE AGENTS: How Evolution Gave Us Free Will by Kevin J. Mitchell. Princeton University Press, 2023. 352 pages. Hardcover; \$30.00. ISBN: 9780691226231.

For almost as long as we have written records, humans have been discussing how free our will is. In ancient times, the constraining factor was typically the gods or fate. There are still today some theologians who believe a proper understanding of the divine compels them to recognize what Luther called “the bondage of the will.” That is, on theological grounds, they deny free will. More common now, however, are those who deny any room for free will on the basis of what they consider to be a proper understanding of science.

Prominent among the latter is Stanford biologist and neurosurgeon Robert Sapolsky, whose book *Determined: A Science of Life Without Free Will* argues that there is no free will and that if there is no free will, then it is wrong

to hold people morally responsible for their actions. His argument against free will rests on two main premises:

1. We know the laws of physics well enough to say that freedom cannot be a property of material entities.
2. Human beings are nothing but matter.

I agree with the claim that there are always conditions around free will, and so to some extent this can condition moral responsibility. Nonetheless, whereas Sapolsky accepts the antecedent (there is no free will) and thus is forced by logic into what he calls the “nutty” consequent (denying moral responsibility), I can’t bring myself to believe that people are never morally responsible, and so I have to deny the antecedent. The irony of this is that if Sapolsky is right, then I can’t help coming to that position! And I can no more be held rationally responsible than morally responsible on Sapolsky’s account. Everything that happens is just the result of the initial conditions and the immutable laws of physics. That is a grim view of the world.

Some will respond that Sapolsky is right about the first premise, but then also claim that we humans have immaterial minds or souls, and that this is the origin of our free will. For us as Christians, that isn’t a ridiculous proposition: we are committed to the existence of an immaterial personal being (or rather, tri-personal being), and we believe that such a God has free will. So, I won’t claim this response defending free will is unreasonable. But this implies a substance dualism (between physics/brain and mind/soul), and I am not convinced that some kind of substance dualism of human beings is necessary to preserve free will. I am more interested in the project of seeing the continuity of ourselves with the rest of the created order, even though in some ways we are remarkably different kinds of beings.

Is there then a way of showing that free will could have emerged from the evolutionary process that produced our bodies? A new book, *Free Agents: How Evolution Gave Us Free Will* by Kevin Mitchell, claims to do just that. Mitchell is a professor of genetics and neuroscience at Trinity College Dublin. He does not argue from religious grounds at all, and sometimes makes sweeping and unjustified assertions that go well beyond science: “There is no cosmic purpose at play – merely thermodynamic tendencies” (p. 42). What kind of empirical experiment would show that?! But it is true that the facts of science have to be interpreted, and metaphysical commitments certainly come into play.

Most significant in this regard is the ontology of life that Mitchell develops. I have always thought that what Holmes Rolston called the “Three Big Bangs” is a very helpful way of naming important ontological developments in natural history—even if the dividing lines are not absolutely stark: (1) the origin of matter/

energy; (2) the origin of life; and (3) the origin of sentience. It seems to me that Sapolsky doesn’t really recognize the significance of the second and third of these. For him, living things (and *a fortiori* sentient humans) are no different in kind than nonliving systems. There might be a greater degree of complexity to our material parts, but essentially we are the same as a tornado or a car (p. 5).

In contrast, Mitchell makes a very important contribution by showing the difference that life makes. He is not reintroducing the kind of vitalism that flourished in the eighteenth and nineteenth centuries, but simply describing the different way of being that living organisms have, beginning with single-celled organisms. “Life is not a state; it is a process” (p. 26). The material particles, from which an organism is built, are constantly changing. What keeps it identifiably the same organism is a continuity of chemical processes occurring inside a membrane that separates it from the “outside” world. It takes in free energy to keep these processes going, and thus persists through time with a degree of independence from the environment around it.

But aren’t these just deterministic processes? No! says Mitchell. Living things are not just input/output machines operating deterministically: “What distinguishes living organisms is that *they do things, for reasons*. They behave in a truly purposeful manner. This is not an illusion or just a convenient way of talking about them: it’s the right way of thinking about them” (pp. 22–23). The ontological category of life must be described differently than matter/energy.

So how can a single-celled organism do things for reasons? There might be some difficulty with language here. Mitchell is not claiming that single-celled creatures have free will, or are sentient, or have moral responsibility for their actions. But he claims that they make decisions based on information—even knowledge—and that is fundamentally different from simply reacting to external stimuli. The information comes first from natural selection: “By continually selecting individuals that are most adapted to their environment, natural selection effectively packs knowledge about the world into the physical structure of living organisms” (p. 49). I found myself continually wondering whether words like “decision” and “knowledge” apply to single-celled organisms, but I am persuaded that whatever we call it, it is different than what goes on in nonliving things and begins to show the building blocks of our free will.

As organisms become more advanced by developing sensors, more information is conveyed into them, and they must develop control systems for acting on that information. The key is that they can represent sensory information internally without acting on it. The more sophisticated organisms become, the control systems guide action over longer and longer periods of time.

Letters

“Organisms develop internal systems of evaluation that free them from the brutal life-or-death judgment of natural selection. Crucially, all these systems are informational. Meaning becomes the currency of cognition” (p. 67).

Mitchell walks us through increasingly complex organisms like the hydra and *C. elegans*, and then those with bigger brains, nervous systems, and sensory equipment. We see the rudiments of self-knowledge developing when organisms must be able to distinguish between changes to the immediate environment they have made, versus similar changes made by other organisms. This is not yet the sort of free will that we have, but it is the development of subjective agency, which is another building block for full-blown free will.

Also necessary is that the future is genuinely open. For this, Mitchell leans on an interpretation of time and quantum physics developed by Lee Smolin and Clelia Verde in which what we experience as the present, is simply the transition from the indefinite possibilities of the future to the definite and unchangeable past. The present complete state of a physical system does not fully predict the next state of that system, and that opens the door for “higher-level features to have some causal influence in determining which way the physical system will evolve” (p. 164). My one course in quantum physics more than two decades ago doesn’t qualify me to evaluate this interpretation.

The “higher-level features” Mitchell points to are called organizational structures or the functional architecture of the organism. This is where he loses me. He moves from control systems of greater complexity to a sense of self, to higher-level functional architectures that are responsible for choosing among possible options. Over and over, he emphasizes (rightly, to my mind) that it is not neurons or brains that have free will, it is the organism as a whole that does. But I don’t see how that has been scientifically explained.

Mitchell has made an important point (which Sapolsky misses) about the categories of life being fundamentally different from nonlife. But now I wonder whether Mitchell has not quite recognized the importance of the third Big Bang: sentience. This too is a different ontological category (though, again, it might come in degrees and resist stark dividing lines), and therefore necessitates different categories of explanation. That doesn’t mean you need something more than matter to make it work, any more than we need something more than matter to make life work. But I am not persuaded that we get free will and moral responsibility explained by functional architectures.

Free will is a capacity of sentient beings, and both free will and sentience have so far resisted scientific explanation

(the latter being called the “hard problem” of consciousness). Maybe they won’t always resist, but even if they do, that shouldn’t make us doubt free will any more than we doubt sentience.

Reviewed by Jim Stump, vice president of programs at BioLogos and host of their Language of God podcast. Jim’s latest book is The Sacred Chain: How Understanding Evolution Leads to Deeper Faith (HarperOne, 2024).

Letters

Gender Nonconformity in the Next Life

In the article by Haarsma et al., “Congenital Disabilities and Gender Nonconforming Identities as Parts of God’s Intended Creation” (*PSCF* 76, no. 3 [December 2024]: 190–206), the authors build a case for acceptance of the disabled in the Christian community, especially for individuals with gender nonconformity. Their calling this to our attention is to be applauded. Haarsma et al. frequently suggested that a postlapsarian viewpoint has prejudiced the view of disabilities; they make a good scientific case for disabilities existing before Adam and Eve sinned. They further suggest that variation, largely due to mutation, is necessary for evolution to occur and is to be appreciated. However, they take some positions that I consider inconsistent with and misunderstanding of the evangelical church. (I felt it necessary to consult a specific, modern document, that of my church Christ Community Evangelical Free Church (EFC) “Exploring God’s Design for Male and Female Flourishing in the Church,” not at all suggesting it is representative of all evangelical churches or of all churches represented in the ASA. Gender nonconformity is mentioned with compassion, but no specific connection to anyone’s sin is mentioned.)

We have all observed that insensitive Christians often ask well-meaning questions, but I think that the authors have exaggerated the degree this happens as a result of a mistaken belief that disabilities are due to the Fall in Genesis. I doubt that the average church-goer is concerned about theodicy when they offer to pray for a disabled brother or sister. The authors regret “mistaken pity” (p. 197) for the disabled; however, arguably “pity” is what motivates the use of adaptive technology for the deaf to hear and the blind to see.

The most obvious cases of gender nonconformity are genetic and apparent at birth or at least by puberty. Gender dysphoria has not been studied enough to know the causes but perhaps is due to brain anatomy and function, so that the individual’s assigned sex at birth is not how they view themselves. Some may want physical or